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TO THE
UNITED STATES NAVAL MEDICAL BULLETIN

PUBLISHED FOR THE INFORMATION OF

THE HOSPITAL CORPS
OF THE NAVY

ISSUED BY

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IN CHARGE

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UNITED STATES NAVY

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TRUMAN H. NEWBERRY,
Acting Secretary.

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PREFACE.

From the first issue of the United States Naval Medical Bulletin it has been intended as a vehicle of communication with the Hospital Corps, and to be the means of imparting information and instruction to it as well as to the Medical Corps of the Navy. The recent expansion and improvement of the Hospital Corps seems now to justify more direct methods and the material prepared for that body will hereafter be issued in the form of a SUPPLEMENT.¹

Contributions for the SUPPLEMENT are desired from members of the Hospital Corps and from other sources, but the Bureau does not necessarily undertake to indorse all views and opinions expressed in these pages.

W. C. BRAISTED,
Surgeon General, United States Navy.

¹The present issue is No. 4. Nos. 1 and 2 appeared incorporated in the July and October issues, respectively, of the United States Naval Medical Bulletin.

PREFACE

It was the first issue of the United States Naval Medical Bulletin which has been intended as a vehicle of communication with the Hospital Corps, and to be the means of imparting information and instruction to it as well as to the Medical Corps of the Navy. The recent expansion and improvement of the Hospital Corps seems now to justify more direct methods and the material prepared for that body will hereafter be issued in the form of a SUPPLEMENT.

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W. C. BARNES.

Surgeon General, United States Navy.

This revised issue of Vol. 2, No. 1 and 2 represents cooperation by the staff and the medical department of the United States Naval Medical Bureau.

W. Z. Zutan

STERILIZATION VERSUS INFECTION.

Sterilization may be defined as the process of killing all bacteria contained in or on material used in a surgical operation.

The unbroken skin of the body is the best natural protection against infection. When the skin is broken, cut, abraded, or even injured microorganisms (bacteria) gain entrance to the tissues and infection occurs. Such infection may cause merely a reddening of the skin, or it may cause redness or swelling more or less local, or redness, swelling, and heat may extend quite a distance. It may go to the lymphatic glands near by or to those more distant. These local infections often end in suppuration or abscess formation. Sometimes the infection set up by the entrance of bacteria through the broken skin becomes very serious. Instead of remaining more or less localized it advances through lymphatic channels until living bacteria enter the blood stream, multiply there, and flow everywhere throughout the body, giving rise to fever, either slight or severe. At times infection is serious enough to end in death after a few hours or days of acute illness, or more rarely after long weeks of serious illness. The more severe forms of infection are sometimes called "blood poisoning."

When a surgeon performs an operation he cuts the skin or mucous membrane and thereby makes an opening into the tissues of the body, through which the bacteria, which causes infection, may gain entrance. Forty years ago an operating surgeon almost always carried infecting bacteria through the skin into the tissues. Infection in those days was the common everyday accompaniment of all surgical procedures. So common was infection at that time that it was considered a natural result. Doctors talked about "laudable pus." Scientists and surgeons, however, studied the sequelæ of operations. Pasteur gave to the world his discoveries in regard to the growth and life history of microorganisms. Doctors learned that infection was not a necessary accompaniment of surgical work. Later came the ideal that infection should never result from surgical interference. Before this ideal was realized in actual practice there came the

ERA OF ANTISEPTIC SURGERY.

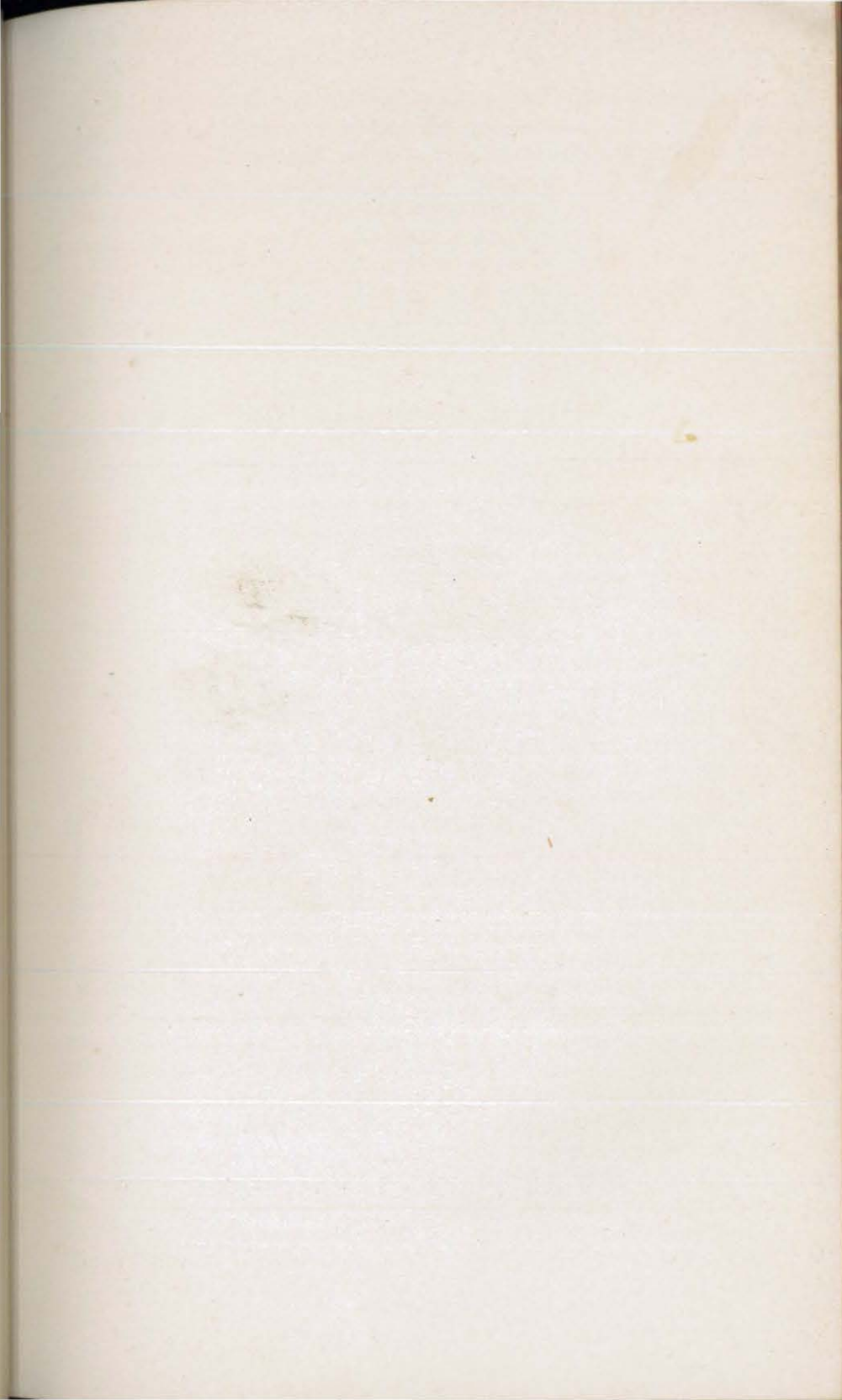
Strong chemicals will kill bacteria. During the early years after Pasteur's discoveries Lister advised the use of strong chemicals to

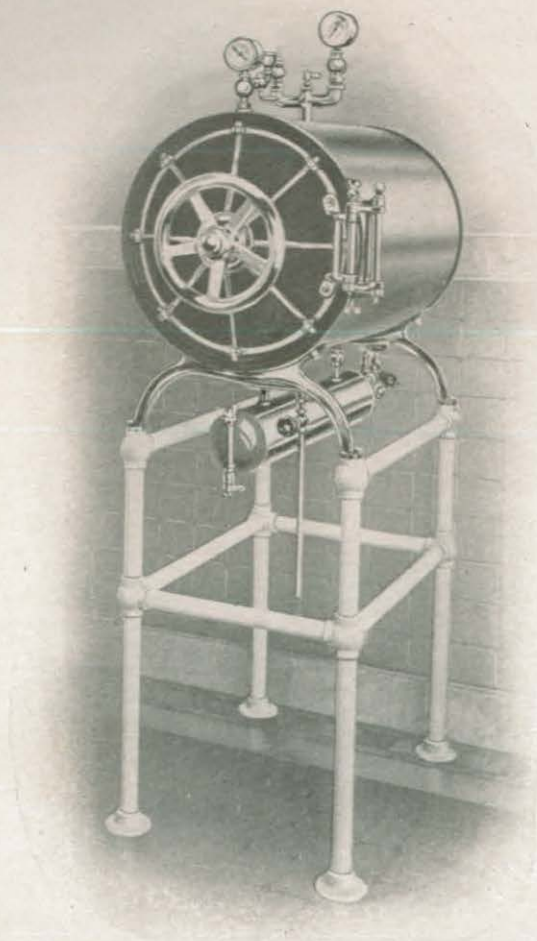
wash the skin and disinfect it before the cut was made by the surgeon's knife. These strong chemicals were used to wash the hands of the operator, to wash and sterilize instruments and dressings necessary at the operation. The use of these strong chemical antiseptics was followed by less severe infections, and in some cases infection did not follow a surgical operation. Chemicals, however, were found to be injurious to the tissues of the body and in many cases injurious to the fabrics, instruments, etc., which were sterilized by them. To-day only a few chemicals are used in the operating room, among which may be mentioned bichloride of mercury, alcohol, and carbolic acid.

THERMAL STERILIZATION.

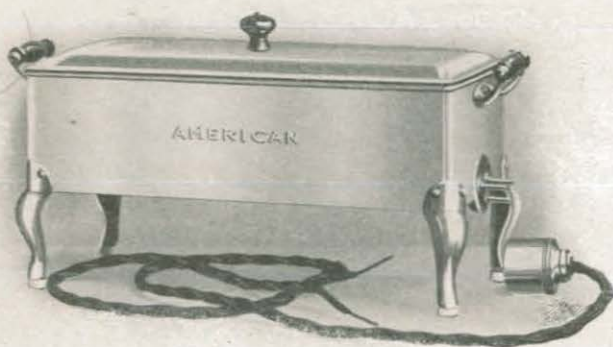
To overcome the inconvenience and limitations of chemical sterilization, sterilization by heat gradually came into use. To-day it has practically eliminated all other forms of sterilization. The simplest method of sterilization by heat is the use of the oven in the kitchen stove. This has many objections. The heat does not penetrate the packages. It may burn some of the fabrics. It is hard to regulate the exact amount of heat and hard to insure real sterilization. Another extremely simple form of sterilization by heat is the use of boiling water. Water at a temperature of 212 F. or 100 C. boiled for 15 minutes is absolutely sterile. Metal instruments, glassware, rubber goods, etc., placed in boiling water from 15 to 30 minutes become absolutely sterile. A wash boiler, a kettle, a basin, placed on the kitchen stove or a pot hung over a camp fire containing water that is boiling will produce as effective sterilization of the material placed in the water as will any more complicated and expensive apparatus that has ever been devised. On ships of the Navy, at shore stations, and in naval hospitals boiling water is used for the sterilization of instruments and other surgical materials every day. It is seldom that the boiling water is produced on the galley stove or the kitchen stove. Water is generally boiled in a specially made sterilizer called the instrument sterilizer. Instrument sterilizers are made so that the water is boiled by a gas burner or an oil burner placed beneath it. Others are made so that the water is boiled by steam passing through a coil, the steam frequently coming from the boiler room of the ship or central heating plant of the station. Sometimes the water is boiled by electricity. One to two per cent of soda or borax should be added to the water to prevent oxidation of instruments.

Boiling water is used to sterilize metal instruments and such apparatus as basins, trays, pitchers, articles made of glass, porcelain, rub-





Dressings sterilizer. Steam under pressure.



Electric sterilizer.

ber, etc., but dressings, bandages, gowns, caps, sheets, towels, etc., would come out of boiling water wet and unfit for use so that, except in an emergency, the method of sterilization by boiling water is not used for such fabrics.

STERILIZATION BY STEAM.

There are two simple forms of apparatus which utilize live steam for the purpose of sterilization. One of these is the Arnold sterilizer. The other is a combination instrument and dressing sterilizer found at times in the Navy where local conditions make it impracticable to have a better form of apparatus for the sterilization of surgical material.

The sterilizers which utilize flowing steam require a great deal of intelligent care in their use in order to insure complete sterilization. The goods placed in these sterilizers must be sterilized one day, then two days later, and, finally, again two days later. These three different sterilizations are necessary, with the periods between sterilization, in order that certain hard-to-kill bacteria and their spores may be completely killed. *Fractional sterilization* is the name applied to the principle upon which these sterilizers work. The process is long and tedious and nowadays seldom used.

STEAM UNDER PRESSURE.

The best method of sterilization for dressings and other materials which can not be sterilized by boiling is that which utilizes the sterilizing effect of steam under pressure. Steam when it comes from boiling water has practically the same temperature as boiling water, namely, 212 F. or 100 C., but if steam is confined in an air-tight chamber its temperature rises in accordance with the amount of pressure it undergoes. Steam under pressure penetrates the cracks and crevices of the dressings and searches out all the bacteria and kills them. The use of steam under pressure is far more effective than that of flowing live steam, partly because of this penetrating quality it acquires and also because of the higher temperature which accompanies the increased pressure. When steam is compressed to 15 pounds its temperature rises to 250 F. or 120 C. When moist heat at 250 F. is applied to bacteria or their spores sterilization occurs just as soon as sufficient moisture is absorbed to allow coagulation of the albumen of the microorganisms to occur. This is called the thermal death point of bacteria. The apparatus in which steam under pressure is most effectively utilized for sterilization is called

the autoclav. In some types of this apparatus the steam which enters the chamber is produced by gas or a kerosene lamp placed directly beneath the water jacket. In other types the steam for the central chamber is produced by the heat which comes from steam carried through a coil in the water jacket or through a coil in a water container placed below the chamber. In some of the very latest forms of autoclav the steam is produced by heating with electricity.

Absolute sterilization of dressings in an autoclav can only be made certain if the apparatus is operated by one who thoroughly understands its use and who uses it with intelligence. Upon the hospital corpsman's proper use of the autoclav may depend the life of a shipmate or even the lives of many shipmates when battle conditions or illness make surgical procedures necessary. Essential steps in the operation of the autoclav are:

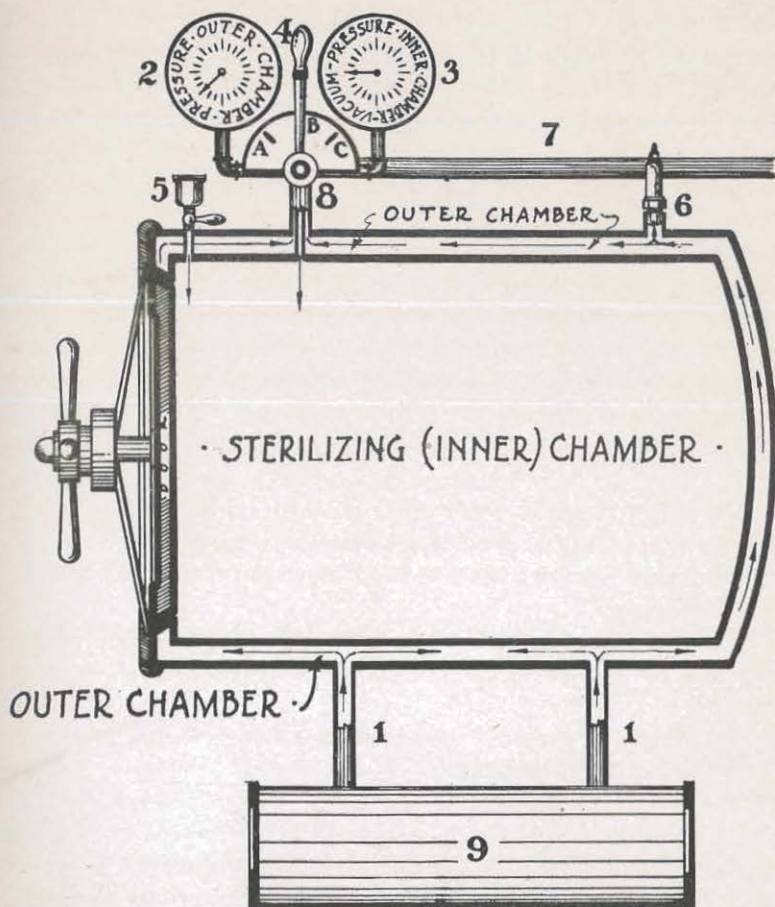
- (1) Place dressings, etc., in the air-tight inner chamber.
- (2) Allow steam to enter outer chamber until pressure of 15 to 25 pounds (according to type of apparatus) is registered.
- (3) Allow hot air to escape from inner chamber and steam to enter inner chamber.
- (4) Fill inner chamber with steam, allowing pressure in the inner chamber to increase until 15 pounds is reached equal to 250 F. or 120 C.
- (5) Maintain pressure and heat and steam in the inner chamber for a period of 30 minutes.
- (6) Produce a vacuum in the inner chamber to remove all steam and moisture.
- (7) Open door of chamber and remove dry and sterilized contents.¹

In every operating room, whether aboard ship, at a station, or a naval hospital, there should be at hand a blue print of the autoclav there installed with detailed instructions as to exactly how that autoclav should be handled in order to produce the desired result, absolutely sterilized material.

Certain battleships have installed in the operating room a combination instrument apparatus, water, and dressing sterilizer, all on one stand and very conveniently arranged, the necessary heat being readily obtained from the boiler room through steam pipes already connected. On a few battleships of the latest type the heat is obtained from the electric current.

A development of sterilization by steam is known as disinfection by steam. On a few battleships and at certain naval hospitals large pressure sterilizers are installed for the sterilization of mattresses, clothing, and other articles too large to be placed in the dressing

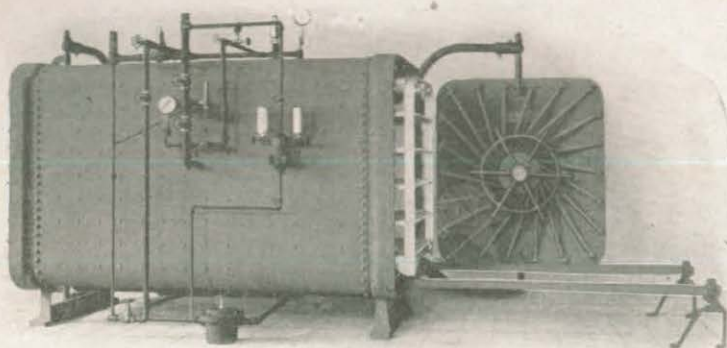
¹ In the diagram an additional valve for the escape of air from the inner chamber should be shown at the bottom of the sterilizer.



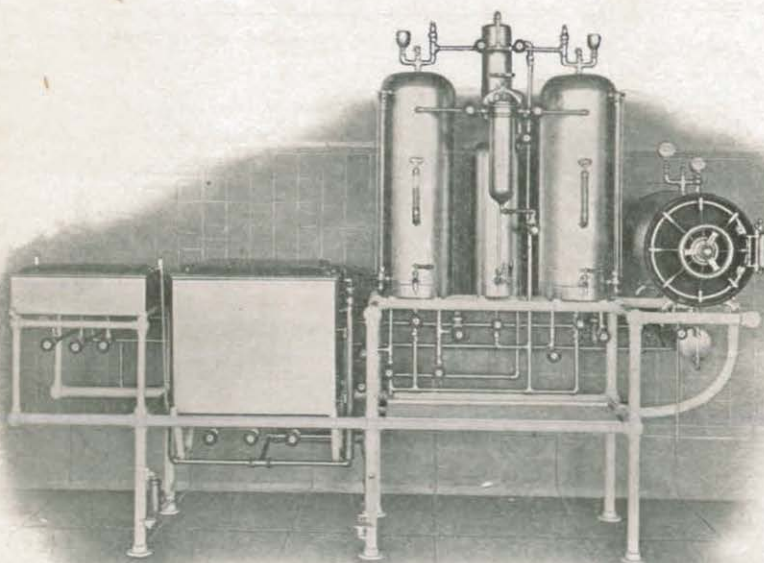
• KEY •

- 1 • STEAM ENTERS OUTER CHAMBER AND SHOWS AT "2"
- 2 • PRESSURE GAUGE
- 3 • COMBINED PRESSURE AND VACUUM GAUGE CONNECTING WITH STERILIZING CHAMBER
- 4 • VALVE HANDLE WHEN AT:
 - A • STEAM IN OUTER CHAMBER ONLY
 - B • STEAM PASSES THROUGH TO GAUGE "2" AND IN ADDITION PASSES THROUGH "7" (EXHAUST PIPE) CREATING (AS IT RUSHES BY A SMALL OPENING IN VALVE "8") A VACUUM IN THE INNER CHAMBER. THIS VACUUM (NEGATIVE PRESSURE) IS REGISTERED ON GAUGE "3" (VACUUM)
 - C • STEAM PASSES INTO INNER CHAMBER AND IS REGISTERED ON GAUGE "3" (PRESSURE)
- 5 • CUP VALVE WHICH WHEN OPENED ALLOWS THE HOT AIR FROM THE INNER CHAMBER TO ESCAPE, AND AT THE END OF THE STERILIZATION RELEASES VACUUM WITHIN INNER CHAMBER SO THAT DOOR MAY BE OPENED
- 6 • SAFETY VALVE
- 9 • BOILER FOR GENERATING STEAM

• DRESSING STERILIZER •



Disinfecting sterilizer for mattress, clothing, etc.



Steam sterilizer for instruments, utensils, water, and dressings.

sterilizer of the medical department. With newly established naval base hospitals abroad, a portable type of steam disinfecter is now supplied similar to those on certain ships and in naval hospitals.

ADVICE TO A HOSPITAL CORPSMAN ON INDEPENDENT DUTY.

If you are ordered to a vessel to which no medical officer is attached what should you take with you, what should the ship's medical department have, and what are your duties aboard that vessel?

(1) You should have the Handy Book for the Hospital Corps in your bag, and also a copy of Form O, so that you may know how to designate and make requisition for the blank forms you may need.

(2) The ship should have—

The Medicine Box (Supply Table, p. 30).

The Medical Compend for Masters of the Naval Auxiliary Service.

The Manual for the Medical Department.

Medical Department forms (obtainable on Form O).

(3) Your duties are—

To assist the captain in first-aid care of the crew.

The custody and care of the health records of the crew.

The preparation of medical reports and returns to Bureau of Medicine and Surgery.

When on board you should—

(1) Study your Handy Book.

(2) Study the Manual for the Medical Department.

(3) Learn the Naval Regulations and Instructions affecting the Medical Department.

(4) Consult the captain and call for medical assistance when necessary.

The following directions of a specific character have been contributed at the editor's request:

SUPPLIES.

The small vessels of the Navy, other than destroyers, on which the hospital corpsman is the sole representative of the medical department, will each be issued a medicine box, the contents of which are listed on page 30 of the supply table of the medical department. It would be well, therefore, for all hospital corpsmen who may anticipate this independent duty, to familiarize themselves with the contents of the Navy standard medicine box. It is believed that

a sufficient variety of medical supplies are contained in the medicine box to treat the more common ailments ordinarily met with on board ship by the hospital corpsman in the absence of a medical officer.

The contents of the medicine box may be replenished from time to time by submitting a requisition on Form 4 for such articles as are required, the supplies to be furnished by the nearest supply depot. When this is not practicable, necessary supplies may be procured from a larger ship, when in company with the same, by application of the commanding officer of the ship to the senior officer present, requesting that the ship's medicine box be replenished by one of the vessels of the fleet, or hospital ship, as the case may be, the request being accompanied by a list of the needed stores.

Every advantage should be taken of the ship's vicinity to a supply depot by submitting requisitions as noted to replenish the medicine box, or when at a navy yard by applying to the medical officer of the yard for necessary supplies.

If the ship is not in home waters, or if means of replenishment of medical stores as above indicated are impracticable, the commanding officer of the vessel is authorized to make purchase in a foreign port of such medical supplies as may be needed. (Art. I, 4473 (3).)

In addition to the medicine box the ship's boats should be provided with the Navy standard boat box for use in case of an emergency, these boat boxes may be procured from the supply depot on a Form 4 requisition.

The regulations relating to medical supplies cited in the first eight pages of the supply table of the medical department give full instructions regarding the care, transfer, etc., of medical stores. Copies of the supply table and the Manual for the Medical Department may be obtained from the supply depot and should be available for reference on all vessels.

Assistant Surgeon O. G. RUGE, U. S. N.

REPORT AND RETURNS (to Bureau of Medicine and Surgery).

1. Be sure to make *daily* entries in the "Journal of the Medical Department."

2. Find out if there is a health record on board for every officer and man. If not, ask such person where he was last on duty, then write to this place for it through official channels.

3. On receipt of a health record turn to the "Abstract of health record" and enter the name of your vessel or place of duty and the date of person's arrival.

4. As soon as you learn of the transfer of an officer or man turn to the "Abstract of health record" and enter the date of transfer, a

summary of any sick days, sign, and forward to place where officer or man was transferred.

5. If the officer or man is transferred as a patient be sure his health record accompanies him.

6. As soon as an officer or man is admitted to the sick list, even if only for record, begin the making of a Form F card and as soon as discharged to duty or otherwise disposed of send in the ORIGINAL to the Bureau of Medicine and Surgery immediately and keep the DUPLICATE in a secure place for future reference.

7. If you have a health record that you do not know what to do with, send it to the Bureau of Medicine and Surgery with an official letter stating how it came into your possession or where you found it.

8. At the end of the required period prepare Forms F and K and forward promptly.

9. Read your instructions carefully, do not guess what the bureau wants, place only what is called for on any report or return, and be sure that you give all the information the form calls for.

10. In case of emergency, if possible, save your health records.

NOTE.—Write the names of all persons in full on all letters, forms, reports, and returns, also give the grade or rate.

Write the above so that it can be read.

Assistant Surgeon C. E. ALEXANDER, U. S. N.

TRANSFER OF PATIENTS.

The hospital corpsman on independent duty on a small ship or patrol boat may under certain circumstances be at a loss to know just what action should be taken to dispose of his patient to the best interests of all.

In this connection the following regulations and instructions should be thoroughly understood. If read in the order enumerated, a more or less continuous story results: Regulations 2955, 2960; Instructions 2105, 2106; Regulations 2961, 2962, 3582, 3585, 4532, 4534, 4551, 2963; Manual for the Medical Department, Articles 2981 to 3011.

It is the duty of the hospital corpsman, as the representative and only member of the medical department on board, to carefully observe the individuals of the crew in order that he may be on guard against any disease or condition which may not come to his attention in any other way.

Should he suspect an existing disease, the patient should be placed under observation; that is, either restricted to sick quarters—to bed if necessary—or directed to report daily for examination. Once having confirmed a suspicion or determined that the individual under

observation or who presents himself is a patient requiring medical care, the commanding officer must be so informed.

Next arises the question, Can this patient be cared for on board or must he be sent elsewhere; and, if the the latter, where and how is this to be done?

If there is, near-by, a mother ship or a large ship having a medical officer, he should be consulted, or the man transferred to the more adequate facilities of the larger ship.

To transfer the man, make out a hospital ticket, and make entry of admission in health record, obtain the permission of the commanding officer, and prepare to dispose of the man. If he can walk, clothe him suitably; if not, place him in the Stokes stretcher, with such cover as the weather may demand, ready to go in the boat.

If there is no mother ship, a hospital ship may be near at hand, and transfer to it should be effected in the manner stated.

If there is no mother ship, large ship, or hospital ship, disposition ashore must be sought. Two possibilities are open. If near a section base, the patient should be transferred to the care of the medical officer or representative at the section base dispensary. From this dispensary the man may be returned to duty or he may be further transferred to the nearest naval or other hospital.

If near a naval hospital, the patient should be transferred directly to the hospital. In this event, and it is possible and practicable, it is desirable that the opinion of a near-by medical officer be obtained first as to the necessity for such transfer.

In the event that no naval establishment is available for the disposition of the patient, the facilities of a United States Marine Hospital or of a quarantine or other station of the United States Public Health Service should be sought. The admission of the patient is obtained on request by the commanding officer of the ship, made directly to the hospital or station at hand. (Regulations 3582.)

When medical services can not be obtained from either naval or Public Health Service sources, or when transportation to one or the other is not practicable, or in cases of sudden emergency, a civil physician may be employed or admission to a civil hospital may be authorized by the commanding officer of the ship. (Regulations 3582.)

In a foreign port a patient may be disposed of by transfer (1) to a hospital ship if in the locality; (2) to the United States by first available public or Government transportation; (3) to a civil hospital.

Transfer to the United States should occur subsequent to a board of medical survey, and only when the patient is able to travel alone on a public or Government conveyance without the services of a

medical attendant or when he may be sent under the care of medical officer of a returning naval vessel.

Transfer to a civil hospital must be effected with the authority of the commanding officer. Having placed the patient in the hands of the civil hospital physicians, the case should be continued and observed and records kept on board. Upon the departure of the ship the case, together with all the papers, should be turned over to the United States representative (consul, etc.) or another naval medical or other officer in the vicinity. (Regulations 2962.)

An insane patient should be carefully guarded and transferred to a naval or other hospital under the guard of the medical attendant for further disposition. The same applies to a case of tuberculosis.

The body of a patient who has died should be turned over to the hospital ship, the naval hospital, or local naval medical officers ashore for disposition. In a foreign port a body may be buried in a local cemetery, or, preferably, prepared for shipment to the United States under regulations governing the disposal of remains. The transportation expenses in this event are paid out of special appropriations for the bringing home of remains from foreign countries.

Passed Assistant Surgeon W. E. EATON, U. S. N.

GENERAL PRINCIPLES OF CONDUCT.

Confine yourself as much as possible to details of hygiene and nursing and avoid drugging. The advertised action of a drug is often disappointing, and most remedies have a variety of results, some of which are decidedly unpleasant, not to say dangerous, unless you know the constitution of the patient and hit on the exact dose the particular individual requires. You can reap a rich harvest of abuse if you make a slight error in the use of medicines, but as a hospital corpsman and not a doctor you can not be blamed if you go slow with drugs. A mustard plaster, a hot-water bag, an enema, an ice cap, an alcohol rub, are simple and harmless remedies within your province. Opium, strychnia, strong cathartics, etc., may get you into trouble.

If you have what looks like a serious case, make the most careful study of it, write down the history and symptoms. Keep a minute record of pulse, temperature, respiration, urine, and stools and report to the commanding officer, so that the responsibility for the care and disposition of it may not rest wholly upon you. The commanding officer is responsible for the personnel under him and has a right to know of any unfavorable circumstances affecting his men.

Do not hesitate to ask for medical assistance, even if you are not sure that it is absolutely necessary. No blame can attach to you for caution, and serious trouble may arise if you take too much upon

yourself. Do not try to play the doctor or encourage the crew to think you know it all. On the contrary, be modest in the matter of your attainments. The good work you do will be all the more creditable to you.

Remember that high temperature usually indicates a serious condition. Pain or soreness in the belly, even if the patient treats it lightly, may mean appendicitis, gall-bladder inflammation, or some other serious ailment, and if there is elevation of temperature at the same time use enemas rather than cathartics, or a ruptured gut and peritonitis may reward your too active treatment.

A safe course with any sickness is to put the patient to bed on a liquid diet and keep a record of his case, standing by to call for help if the lapse of 48 or 72 hours does not bring the patient to normal. Keep a record from the start of every case you see for your own protection and to assist the doctor in making a diagnosis should you have to call for one later on.

Remember to look a patient over thoroughly no matter how plain the diagnosis of his trouble may seem. His chief complaint may be of pains in the joints. Don't dose him with salicylates until you are sure that the prime factor is not a tonsillitis. An inflamed eye may be infected from gonorrhea. Sore gums may be due to syphilis. Be cautious in handling drunken patients. A man in an alcoholic stupor may also be suffering from a fractured skull and brain injury. A case of grippe which does not get well in a week or 10 days may really be one of consumption, etc. Be on the lookout for the acute infectious diseases, especially among men who have just joined the ship or returned from leave at home.

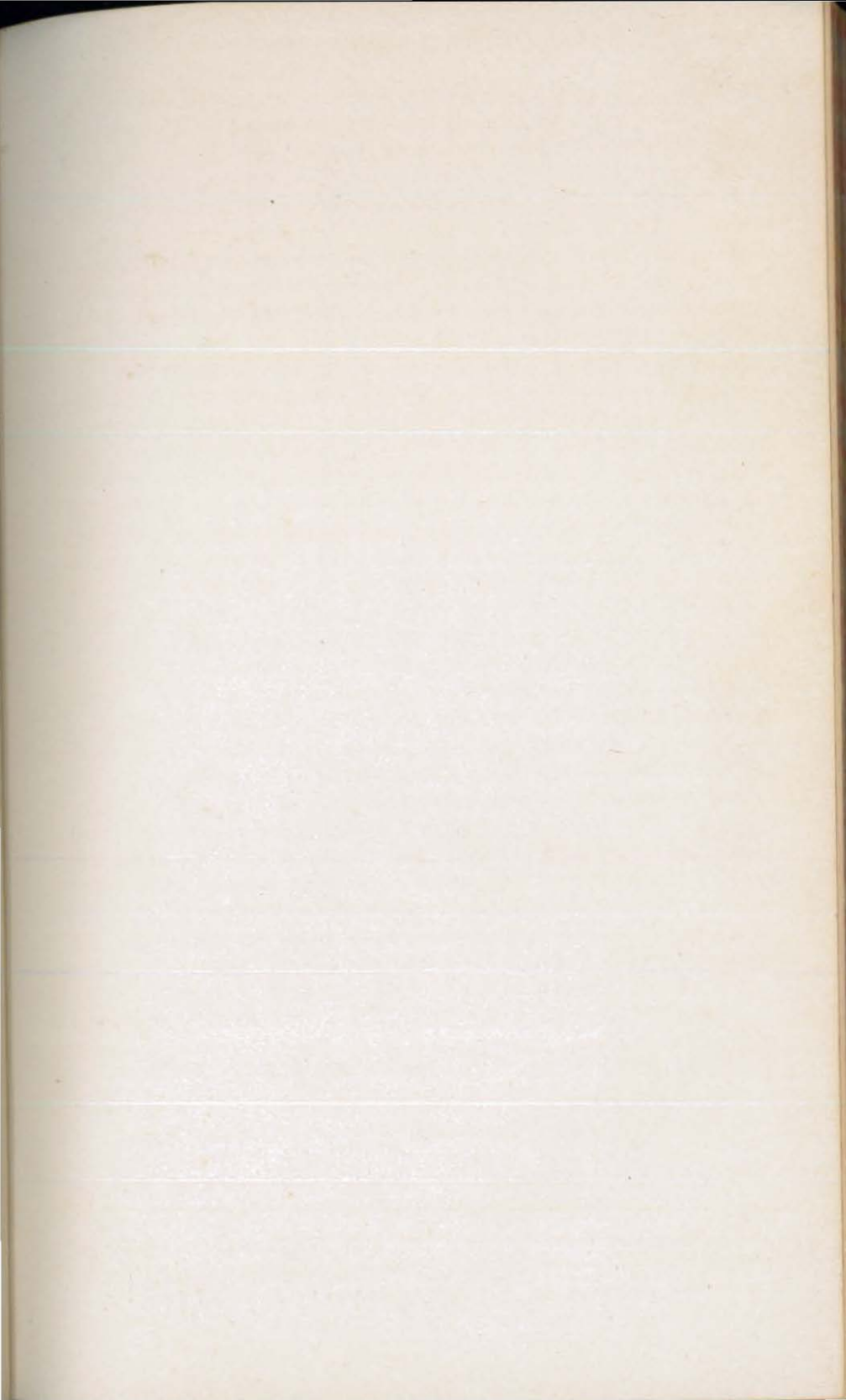
Do not allow the sick bay to be a loafing place for the crew and do not try to make a reputation or win popularity by using the medical department as a means of dispensing favors. If you toil early and late for the sick and do not have too much to do with the well, you will get the reputation of being on the job, and that is the reputation worth having. In caring for officers trifles count more than ever. Dirty finger nails and a soiled jumper will discredit you far more than the frank confession, "I don't know, sir" (and don't forget the "sir").

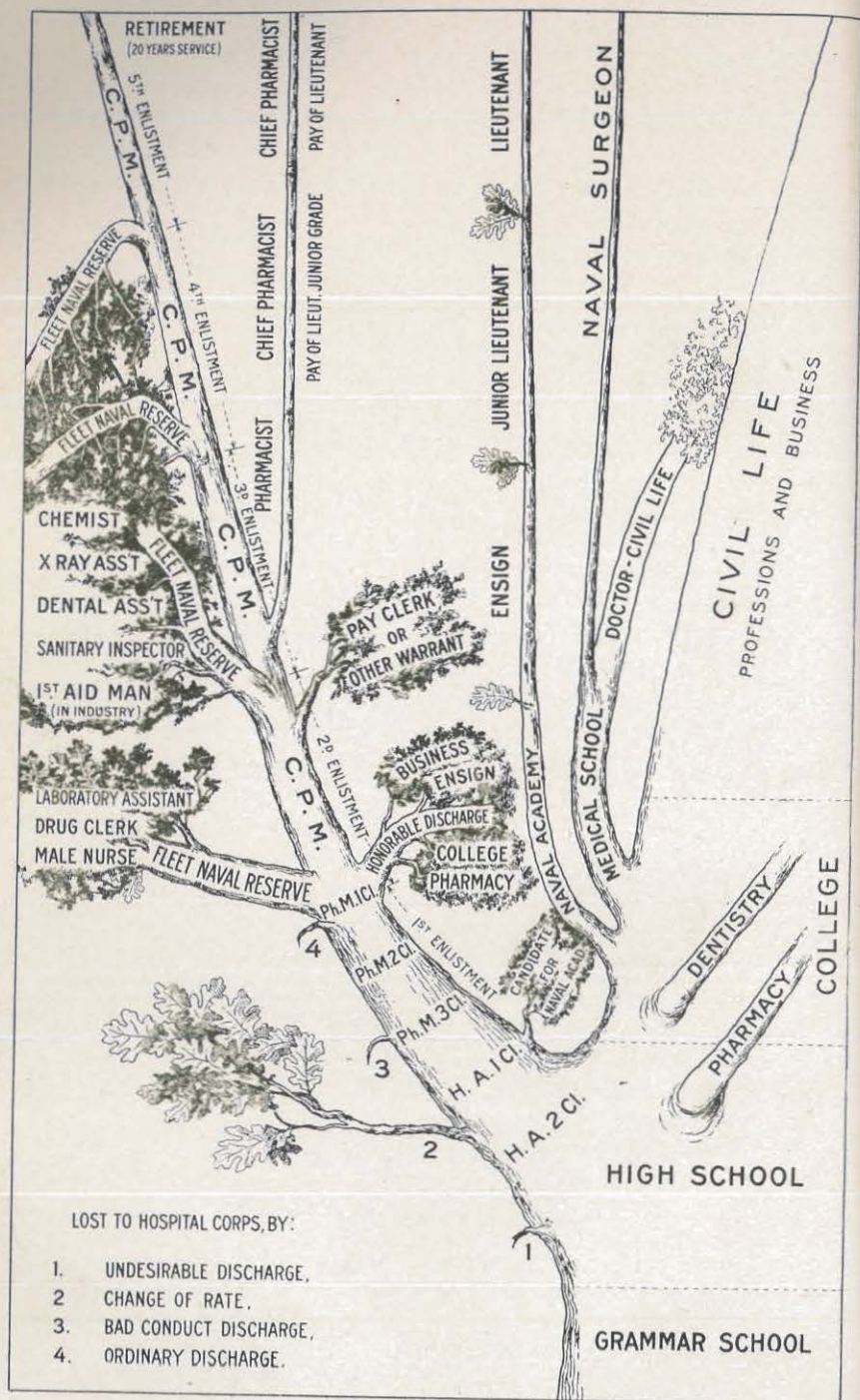
Medical Inspector J. S. TAYLOR, U. S. N.

OPPORTUNITY.

Now that you are a member of the Hospital Corps what are you going to do about it?

Will you be lazy, careless, and thoughtless of the future, a happy-go-lucky "drifter"? Will you get into the backwaters that lead to undesirable discharge, to B. C. D., to a "small ticket" at the end of





The tree of education and its hospital corps branch.

your cruise? Will you be of the sort that "just gets by" or will you show them what you are worth and prove to the medical officers with whom you are serving that you are not only a hustler when it comes to doing your "bit," but that you are keeping your brain from rusting by study and keeping your eyes open to the opportunities around you?

Whatever you may decide as to your real aim in life, the job for you to tackle every day is to gain experience, knowledge, and ability in the Hospital Corps. The man who is improving himself in the work he is paid for and doing more than the other fellow is going ahead toward the goal he has set out to reach.

Advance in rating in the Hospital Corps and you are better fitted for any job you may take up later in life.

Study carefully the drawing of the tree on the opposite page. That is a picture of the Hospital Corps to-day—its opportunities, its relation to civil life and to other branches of the military life. Somewhere on the branches of that tree is *your* place. Where do *you* stand *now*, and where do you want to stand *four years from now*?

Do you want to leave the service some day and become a doctor? On another page a member of the corps has told you how. In order to do this you must not only advance in rating in the Hospital Corps but in addition study other subjects in order that you may enter college on the way to medical school or enter the medical school itself. Any hospital corpsman who on leaving the service takes up the study of medicine will never regret the experience he gained while he was a hospital corpsman in the Navy.

Do you want to become a pharmacist in civil life? Develop in the Hospital Corps of the Navy and become a first-rate chief pharmacist's mate, and when you leave the Navy and in civil life study pharmacy you will be a lot better pharmacist than if you had never succeeded in the Hospital Corps.

If after one cruise you elect the Hospital Corps as a life work, come back, as so many are now doing, and you will find it a real place to be, with a real future ahead of you.

Do you want to be an ensign? Read the Bureau of Navigation circular letter of August 31, 1917, called N. Nav. 416, and read G. O. No. 153. That will tell you how to become an ensign without going to the Naval Academy. If you decide to become an ensign, don't forget to be at the same time the best sort of hospital corpsman or no one will help you.

What makes a man? Courage, initiative, ambition, perseverance (sticktoitiveness), hustle, energy, ability to lead, study, health, being wide awake, speed, carefulness, honesty, cheerfulness, tact, and willingness to work.

What ruins a man? Laziness, carelessness, quitting, kicking, grouching, lack of ambition, thoughtlessness, and failing to set himself some definite goal.

Look again at the drawing; all the courses possible for you to pursue are shown there by the different branches. Pick out *your* branch and climb.

A LETTER FROM THE FRONT.

Doctor George Brewer, former professor of surgery, now in charge of the Columbia-Presbyterian Hospital unit in France, in the Columbia Alumni News, volume 9, No. 6, says:

SEPTEMBER 14, 1917.

Our unit has been particularly fortunate in that we have been assigned to the best and most attractive base hospital in all northern France. Our relations with the British officers, who were formerly in charge, were most cordial, and since their departure we have been fortunate in our relations with the higher officials.

The hospital normally has 1,040 beds, but can be expanded to nearly twice that number. We drain our patients largely from the section south of Arras, and so during the past few weeks have not been particularly busy, as most of the fighting has been done in Flanders.

Our pathological men have been very active and are studying the question of nephritis and trench fever. I hardly dare to say it, but we feel reasonably sure that Pappenheimer has discovered the organism for trench fever. If so, it will be one of the greatest achievements of the year, if not of the whole war.

Since the middle of July we have sent a number of operating teams to the front to serve in the casualty clearing stations, just behind the line. We were asked to nominate a certain number of teams which could be called upon in an emergency. The first two teams to go up were headed one by Dr. Darrach and one by myself. Each team consisted of an operating surgeon, an anesthetist, an operating nurse, and an orderly. The first two teams went up about July 21, and we returned day before yesterday, having had seven weeks of casualty clearing-station experience. Our casualty clearing station was No. 61; Darrach's No. 47. We were the nearest to the line of any casualty clearing hospital, being only $4\frac{1}{2}$ miles from the Yser Canal. During the battles the work was very strenuous, and in one day our station received 900 wounded. That, however, was our biggest day, but we rarely received less than 200 during a given 24 hours. We had eight surgical teams and operating rooms going day and night during the entire seven weeks. Under ordinary conditions each team worked

12 hours a day, but occasionally when some "particular push" was on the teams worked 16 hours out of the 24.

I never did as much surgery in as short a time in all my life. It was intensely interesting, but the character of the wounds was something beyond description. I have never seen such mutilations or such a distressing multiplicity of injuries. On the other hand, I have never seen such superb courage and such magnificent self-control as shown by the patients who came under our care. What they go through in the trenches and what they endure in the way of suffering and hardship is entirely beyond my comprehension. I would not believe that any human being could endure what these men have endured during the past few months.

We were relieved by two other teams that came up last Tuesday, one headed by St. John and the other by McCreery. They will take our places for three or four weeks, when we hope to send up others. I am convinced that the experience at the front is of the greatest value to those doing base work, and I am making every effort to have all of our surgical men have this experience for at least two or three weeks.

You may have noticed in the papers that a number of casualty clearing stations had been bombed during the aeroplane raids the end of last month. Ours was the first to be attacked. We were bombed three times in five days, and, as you probably know, Miss MacDonald, my office nurse, was wounded. During the five days nine casualty clearing stations in our immediate neighborhood were bombed, the total casualties being about 200. A number of medical officers and nurses were among the killed and wounded. Fortunately, all of our men escaped. Miss MacDonald lost her right eye, but is again back at the hospital waiting to go on duty as soon as the surgeon will allow it. She was most plucky—absolutely refused to go home or to be invalided to England.

It seems very restful to get back to our base hospital where we can sleep in a bed and get fairly good food and be free from the constant menace of night attacks from aeroplanes and the ceaseless noise of near and distant bombardment.

LAND TRANSPORTATION IN THE BRITISH NAVAL MEDICAL SERVICE.

(Reprinted from *The Modern Hospital*, November, 1917.)

The medical department of the British Navy has created a special land transport organization for the removal of the wounded from the points at which they may be landed. Surgeon General Sir James Porter and Staff Surgeon A. Vavasour Elder describe this phase of

the work in the British Medical Journal. The organization includes a central office at the Admiralty, medical transport officers at the chief naval ports, and assistant medical transport officers at all places around the coast where wounded are likely to be landed after action. One of the difficulties of the problem is the impossibility of foretelling just where and in what numbers wounded will be landed. In order that no place which is likely to receive wounded may be left without means of rendering medical aid, emergency medical depots in charge of medical transport officers have been established at various places along the coasts.

From the time a wounded man is landed from a ship until he is placed in hospital he is in charge of the land medical transport. When a man is wounded severely enough to require immediate treatment in bed, after having received medical attention, he is placed in his cot, in which he travels all the way from the fighting ship to the hospital.

All the ambulance trains, motor ambulances, bearer parties, etc., have been specially organized in a standard and uniform manner with regard to each link in the transport chain—thus, the patient and his cot with bed and bedding are landed from the ship and turned over to the bearers specially trained in the handling of cots, who carry the cot to the ambulance or ambulance train, as the case may be, and load it. In exchange for the "loaded cot" the ambulance or ambulance train gives a clean, empty, and fully equipped standard cot for return to the ship from which the patient was received. In this manner the fighting ship always maintains her complement of clean cots.

When an ambulance or train is filled it moves off to its destination, and on arrival the same exchange of cots is made as before, and so on throughout each link until the patient is finally taken out of his original cot and put in bed in hospital. By this method there is a constant outgoing stream of clean cots from the base to the ships at sea all ready for further service. Everything connected with the land transport of wounded is maintained in a state of immediate readiness and finally, and most important of all, the wounded themselves are spared the suffering caused by repeated transfers from ambulance stretcher to ambulance train and back again to another ambulance stretcher, etc. Also the time taken thus to empty an ambulance train is very brief, and the delay to ordinary passenger traffic practically nil. At the large naval bases arrangements exist for the cleaning of all cots and bedding, and a store of clean cots for exchange purposes is also established.

THE AMERICAN AMBULANCE HOSPITAL IN PARIS.

(Reprinted from The Modern Hospital, November, 1917.)

The American Ambulance of Paris, organized for the relief of the sufferers of the great war, took its name from a similar organization which rendered never to be forgotten services during the Franco-Prussian War of 1870.

The first volunteers, surgeons, nurses, and untrained workers were enrolled on August 3, 1914. On August 12 the partially completed buildings of the Lycée Pasteur at Neuilly-sur-Seine were requisitioned by the French War Department and turned over to the new organization.

On September 6, 1914, the first patients were received, and on September 9 a train of motor ambulances, dispatched by the hospital, with surgeons, nurses, and supplies, proceeded to Meaux and beyond. It was the first organized volunteer relief to reach the field of battle.

Since the day of opening the history of the American Ambulance has been one of development and extension. The main hospital at Neuilly has a normal capacity of 575 beds, with provision for caring for 625 patients in case of emergency. In its equipment are comprised two general, one special, and two dental operating rooms, two X-ray plants, and pathological, research, and dental laboratories.

The patients treated in the institution have been exclusively surgical cases, and their injuries have in general been of extreme severity, as the American Ambulance has been reserved by the authorities for the treatment of *grands blessés*.¹ From the first a specialty has been made of the treatment of the terrible injuries of the face and the maxillæ so characteristic of modern warfare.

Coincident with the Ambulance Hospital was organized the transportation department, which was progressively developed until, on August 1, 1916, upward of 250 motor ambulances were in service in the field or in the entrenched camp of Paris. Up to that date over 135,000 sick and wounded had been transported, often under fire, and always under conditions requiring courage, tenderness, and great physical endurance on the part of the volunteer drivers.

The Paris section of ambulances assumes a large part of all transportation of sick and wounded in the entrenched camp of Paris.

The sanitary train of the American Ambulance has been in constant operation between the front and the interior of France since the beginning of 1916. Composed of 13 cars, it provides for the accommodation of 264 lying and sitting cases, together with attending surgeons, administrative officers, and orderlies.

¹ Serious cases.

In its equipment are comprised a complete operating room, sterilizing plant, diet kitchen; in fact, everything for the care and comfort of the wounded. The runs of this train now total over 20,000 miles, and over 10,000 patients have been transported in comfort without a single death.

Beginning in May, 1915, a mobile field hospital of 108 beds was placed in service. In February, 1915, an advanced hospital was established at Juilly-sur-Marne.

On August 31, 1916, the report mentions that on that date 1,485 patients were being treated in Neuilly and the various branches. Up to May 31, 1917, over 8,100 cases of acute surgery had been treated in the Ambulance Hospital of Neuilly alone.

In conclusion may be quoted the following from the last annual report:

The committee desires again to thank individually every member of the American Ambulance and of its various services. Whether braving death and exposure in the field, passing sleepless nights at the bedside of the suffering, long hours of strain in the operating rooms, or in the performance of humbler but no less important duties, all have shown courage, steadfastness and devotion worthy of the high ideals of the institution.—*Monthly report of the American Fund for French Wounded.*

FRENCH MILITARY HOSPITAL SHIPS.

(Reprinted from The Modern Hospital, November, 1917.)

Dr. Oudard, staff surgeon of the French Navy, writes in a recent number of the Archives de Médecine Navale that the French have long employed hospital ships in their colonial wars, and that, indeed, in 1877 they built the *Annamite* as a hospital ship. She turned out so well that five others followed her, giving in his experience greater satisfaction than can be obtained from any converted merchantmen. He wishes to see a fleet of steady ships built, of about 10,000 tons and 15 knots, leased in peace time to commercial companies as passenger steamers, available at once on the outbreak of war, and each carrying 600 bed cases in single-tier cots. This is done in Japan. The French hospital ships were a great help to the army at the beginning of the war, when the battles of the Yser were being fought, and the wounded were many. The ship would lie in a northern Channel port and at first she took the wounded as they were brought down by trains or ambulances, straight off the field. When the ship was as full as she could hold, about twice her calculated capacity, she would put to sea, and in a few hours discharge her patients somewhere in the west, every exertion having been made on board for the wounded, though little, except what was urgently necessary,

could be achieved. Still, the wounded were greatly better off on shipboard, the pitching and rolling of the ship being far better borne, particularly by fracture cases, than the constant jolting of a train. Later on, as additional hospital ships came into service, they were less hurried and could lie at bases doing the duty of comfortable base hospitals in France, at Mudros, and elsewhere. Popular report in the army credits the French hospital ships with a great deal of good work. The question of personnel is important. Dr. Oudard requires 10 orderlies for every 100 patients. In the hospital ships or barges used by the Austrians on the Danube and Save, and only employed over short distances, there were 12 orderlies for every 100 "lying" cases and four for every 100 "sitters."

POISON GASES.

(Reprinted from Practical Druggist, September, 1917.)

The exact composition of the gases used in modern trench warfare is not known, but from the appearance, odor, and effects on the men it would seem that most commonly a mixture of chlorine and bromine is employed, possibly at times with the addition of sulphur fumes or formaldehyde gas. Chlorine and bromine are produced cheaply and in large amounts by the Germans as by-products of other industries. They are among the most active chemical agents known, attacking the eyes, and mucous membranes of the mouth, throat, and nose. They first produce a hard cough, followed by the spitting of blood and finally asphyxiation, due to the destruction of the breathing apparatus.

Only one part of chlorine or bromine in one thousand parts of air is necessary to produce almost instant death; one part in one hundred thousand, if endured for any great length of time, is very dangerous.

For use in the trenches the gases are usually liquified and stored in tanks from which the outflow is regulated by means of a valve. If the ground slopes a little toward the enemy and the wind is in the right direction, the gas, being heavier than air, flows over the ground, filling the hollows like so much water.

The most successful method for combating the gas attacks is by the use of a gas mask. The modification now employed is a hood, provided with a mica window, that fits down over the head like a bag, buttoning between the vest and shirt. When the first indications of an attack are evident the hood is moistened with a solution of sodium hyposulphite (hypo) which combines with the gases, rendering them ineffective. Because of the large amount of gas required to poison the constantly changing air, an attack is only of a few minutes' duration. In case one is overcome by the gas, inhalation of dilute ammo-

nia vapors will give great relief, since the ammonia combines with the gas in the bronchial tubes and relieves the difficulty of breathing, although it does not undo the injury already done.

Because of the cruel suffering inflicted upon the enemy, the use of poisonous gases in projectiles was forsworn by the signers of the Hague declaration of 1899. The first attacks of the Germans took the enemy by surprise and inflicted great losses and an untold amount of suffering. Since then the masks have been so perfected that the troops have lost most of their fear of this ruthless form of battle—thus again emphasizing the fact that this is a war fought by science.

CARREL-DAKIN SOLUTION.

(Reprinted from *Practical Druggist*, September, 1917.)

It was while working on native black oxide of manganese, which chemical investigators before Scheele had studied more or less unsuccessfully, that he discovered in short order four new substances—chlorine, oxygen, manganese, and baryta—and of these four the first two have undoubtedly been of the utmost importance for the proper understanding of chemical processes. This happened in 1774. Scheele termed the first substance "oxymuriatic acid"; 37 years later Sir Humphry Davy classified the first of these substances as an element and gave it the name of "chlorine."

Although Gay-Lussac and Thénard were the first to suggest that from its behavior it might be regarded as an element, Davy proved it.

The practical value of this discovery and the important rôle that chlorine has played in the development of chemistry can not be overestimated, and now that its value as a germicide has been proved, and its practical application made possible by the researches of Carrel, the danger of death from infection has been wonderfully reduced. Knowledge of the disinfecting and germicidal action of chlorine is not by any means recent. Chlorine water has been recommended for years locally as a stimulant and disinfectant for wounds and ulcers. However, its irritating nature and the severe pain produced when applied to wounds has militated against its general use in surgical procedure. Some years ago it was discovered that very attenuated solutions of this gas were efficient for the sterilization of swimming pools, but its use for this purpose has been discarded for the copper sulphate treatment of water. Like in everything else the personal equation played a very important part in the handling of chlorine gas for the disinfection of a swimming pool; while one man would exercise great precaution and care in carrying out the technic for the treatment of the water, others would be rather lax in varying degrees

with the result that while the water would be thoroughly sterilized it would also be exceedingly irritating and painful to the eyes. In the copper sulphate treatment of the water this condition is not so prone to occur.

It may be of interest to know that as early as 1846 the disinfecting properties of chlorine were proved by the successful employment of it in eradicating an epidemic of puerperal fever in Vienna. In this case bleaching powder was used.

Undoubtedly the ideal germicide for combating infection that occurs in most wounds is the one that has the power of destroying, not only bacteria, but spores as well, and is only local in its action and therefore without danger to the host. It seems that the hypochlorites have this power. As a matter of fact they have been recognized by public health workers as the most potent germicides that we have, and yet their use in general surgery has been limited for reasons that are obvious. The various hypochlorite solutions are all more or less unstable as to chlorine content and, while they can be made more stable by making them more alkaline, this militates against their use on the tissues.

The first practical application of chlorine in surgical procedure for the eradication and control of infection was undertaken by British surgeons shortly after the beginning of the great war. They immediately recognized their helplessness when a large number of wounded began to arrive from the front with wounds of every description and all terribly infected. They worked with hypochlorous acid in one-half per cent aqueous solution, made by adding 12.5 grams of chlorinated lime and the same quantity of boric acid to a liter of distilled water and allowing the mixture to stand over night. This was then filtered and used as a surgical dressing. In the *British Medical Journal*, July 24, 1915, page 129, they give their results; while these are good, other workers seem to have been unable to duplicate them.

In their experiments they failed to take into account the extreme variability of chlorinated lime, and this may be the main reason why results have been unsatisfactory in different workers' hands.

Dakin's solution then made its appearance. This is now referred to as Dakin's Original Solution. This solution is very easily made: 140 grams of dried sodium carbonate are dissolved in 10 liters of water and 200 grams of chlorinated lime are added; the mixture is well shaken at intervals during one hour; the supernatant liquid is then siphoned off and filtered preferably through paper. This solution is somewhat alkaline, but this alkalinity is modified by the addition of 40 grams of boric acid. This preparation, however, did not prove altogether satisfactory. Sometimes it worked admirably and at other times not. There were times that patients, com-

plained that the solution was very irritating and painful, although the original technic followed in its manufacture was always scrupulously duplicated. Of course, the fault lay with the chlorinated lime. While the formula was always rigidly adhered to, the chlorinated lime seldom had the 25 per cent chlorine content that was required to make a 0.5 per cent solution. When one remembers that the different brands of chlorinated lime available in the open market vary considerably, and that even different packages of the same brand will run from 25 to 35 per cent in available chlorine content (at least that was the range found by us in packages put up in this country, and in Europe it must be greater, as the range of chlorine content of packages bought on the open market there runs all the way from 20 to 37 per cent), it is perfectly obvious as to why results should be so variable in different surgeons' hands.

Now Dr. Carrel's methods for combating infection is simply a more or less continuous irrigation of the wounds with a modification of Dakin's solution, or, to be more exact, a modification of the well-known Labarraque's solution, officially known as *Liquor Sodae Chlorinatae*. This official solution of sodium hypochlorite contains 2.5 per cent of available chlorine and is markedly alkaline. This makes its use as a dressing for infected wounds prohibitive, it being exceedingly irritating and painful. Dilution of this solution with water to reduce it to 0.5 per cent of available chlorine (the strength of the Carrel-Dakin solution) is impracticable, as it is still too alkaline. Such a diluted solution, first neutralized by the addition of boric acid, has been used but with very unsatisfactory results, it rapidly losing its chlorine and proving otherwise objectionable.

Of course, making the preparation in this manner simplifies matters very much and also saves time, a factor of some importance where large quantities must always be available. It was Daufresne who pointed out the disadvantages of neutralization with boric acid, to which he attributed much of the irritation and painfulness, and the extreme variability of the chlorinated lime was also noted by the same observer.

Naturally this illuminating fact put an entirely new aspect on the matter and brought forcibly to mind that estimation of the chlorine content of each new lot of chlorinated lime was absolutely essential before concordant results could follow.

Accordingly Daufresne evolved the following technic for making this preparation, and this only, and no other should be used when Dakin's or Carrel-Dakin's solution is called for:

	Grams.
Chlorinated lime (25 per cent chlorine)	184
Sodium carbonate, dried	92
Sodium bicarbonate	76

Into a 12-liter bottle put the chlorinated lime and 5 liters of water and shake frequently during a period of six hours; dissolve the two sodium salts in 5 liters of water and after six hours add this solution to the mixture of chlorinated lime and water and shake for several minutes. Allow to stand for at least half an hour until reaction is complete and then siphon off the supernatant liquor and filter through paper. The solution undiluted is then ready for use.

When the chlorine content of the chlorinated lime is above or below 25 per cent the proportion of the three ingredients entering into this solution must be increased or reduced accordingly. To avoid the necessary calculation that this entails Daufresne has prepared the following table:

QUANTITIES OF INGREDIENTS FOR 10 LITERS OF DAKIN'S SOLUTION.

Titer of chlorin- ated lime.	Chlorin- ated lime.	Anhydrous sodium carbonate.	Sodium bicar- bonate.
	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>
20	230	115	96
21	220	110	92
22	210	105	88
23	200	100	84
24	192	96	80
25	184	92	76
26	177	89	72
27	170	85	70
28	164	82	68
29	159	80	66
30	154	77	64
31	148	74	62
32	144	72	60
33	140	70	59
34	135	68	57
35	132	66	55
36	128	64	53
37	124	62	52

It would be well to take the titer of this solution occasionally. The same substances used for determining the activity of the chlorine in the lime are used for this purpose.

To 10 mls of the finished solution add 20 mls of 10 per cent solution of potassium iodide and 2 mls of acetic or hydrochloric acid. Measure into this mixture drop by drop from a burette a decinormal solution of sodium thiosulphate until decoloration is complete. The number of mls used multiplied by 0.03725 will give the weight of sodium hypochlorite in 100 mls of the preparation.

In order to determine the alkalinity of the Carrel-Dakin solution or note its freedom from caustic sodium add to 20 mls of the solution 0.2 of phenolphthalein; if correctly prepared, no red coloration should appear.

Estimation of the amount of chlorine in the chlorinated lime is of the utmost importance, and the method for doing this is simplicity itself. One may use the method given in the United States Pharmacopœia or the following, which is the one mentioned by

Carrel in his note to the Journal of the American Medical Association, December 9, 1916, page 1777, and which note is reprinted in the American Journal of Pharmacy February, 1917, page 84:

Weigh out 20 grams of the average sample, mix it as completely as possible with 1 liter of ordinary water and leave it in contact for a few hours, agitating it from time to time. Filter.

Measure exactly with the gauged pipette 10 mls of the clear fluid; add to it 20 mls of a 1:10 solution of potassium iodide and 2 mls of acetic or hydrochloric acid. Drop a drop at a time into this mixture a decinormal solution of sodium thiosulphate until decoloration is complete.

The number of mls of the thiosulphate solution required for complete decoloration, multiplied by 1.775, gives the weight of the active chlorine contained in 100 grams of the chlorinated lime.

THE FIGHT.

For centuries man has striven for health, vigor, and power. During these centuries venereal disease has robbed him of health and strength and rendered him powerless. Year after year venereal disease has pulled man down into the mire of ill health and often so besmirched him that later in life he has pulled wife or child into the slough of disease with him. Generally this enemy of man approaches in the garb of pleasure; seldom does it come with any outward appearance of enmity or danger. It steals upon its victim under cover of darkness or strikes him from ambush. Often it is aided by alcohol. The yearly toll of human suffering taken by this enemy is greater than that on many of the battle fields of the present war. This enemy gives no quarter. The injured in the fight against venereal disease is not placed on the roll of honor.

Will you sit in ignorance waiting for the enemy of mankind to spring a mine beneath you? Will you let the enemy of mankind get you before you deliver your blow against the enemy of your country? Are you going to be a slacker in the fight against the common foe and thereby lose your opportunity to fight the Hun?

"No one is exempt from service in the war against venereal disease." President Wilson has said:

Let it be your pride, therefore, to show all men everywhere not only what good soldiers you are but also what good men you are, keeping yourselves fit and straight in everything and pure and clean through and through. Let us set for ourselves a standard so high that it will be a glory to live up to it, and then let us live up to it and add a new laurel to the crown of America.

There is but one rule of living that will insure safety from venereal disease; and that is the rule of continence; a difficult rule to follow, but one which is worth while from every standpoint, whether of

present health or future usefulness to yourself, your family, or your country.

The hospital corpsman should familiarize himself with the causes, signs, and symptoms of venereal diseases. He should be thoroughly alive to the peril of venereal disease to himself, to his shipmates, to his future, and to the future welfare of the race. He should know all there is to know about venereal prophylaxis. It is his duty to inform himself on this subject and to keep alive to the strategy and tactics employed in the battle against these diseases. He should be able to defend himself and to help a shipmate in the fight against this insidious and ever-present enemy.

This is the fight. It is a fight for yourself and, more than that, for your country. Are you going to play the part of the fighter or the weakling? It is up to you.

PREMEDICAL EDUCATION.

By Hospital Apprentice (First Class) T. E. RENAKER, United States Naval Reserve Force.

Realizing that there is in the Hospital Corps of the Navy to-day a large number of men who are contemplating the study of medicine upon the completion of their enlistment it is believed that the following information, extracted from the Journal of the American Medical Association, will be of interest and value. The statistics published in this article were compiled by the Council on Medical Education after a careful and thorough study of the conditions existing in our medical colleges to-day.

This council has made a classification of all medical colleges as follows: Class A colleges are acceptable, class B colleges need general improvements to be made acceptable, class C colleges require a complete reorganization to make them acceptable.

There are 69 class A colleges, 14 class B colleges, and 10 class C colleges. If you decide to study medicine after you leave the service do not waste your time in attending a class C college (whose diploma is not recognized by 32 State licensing boards), or even a class B college, but in picking out the college which some day you will be proud to claim as your alma mater be sure that it is in the A class. Looking at the proposition from the standpoint of tuition, of the prestige your diploma will give you upon graduation, and all other standpoints it is hardly short of folly to consider the lower grade colleges when so many of the A class are accessible to you.

For the sake of fairness, though, it must be added that colleges are constantly changing their status, so that in three or four years the college that to-day ranks in the C class may then be at the top, class A, and vice versa.

Therefore when the time comes for you to decide on the medical college you wish to enter remember to find out its standing from the American Medical Association, 535 Dearborn Street, Chicago, Ill. As the list of the medical colleges and their present status is too long to be given in this article you are referred to the educational number of the Journal of the American Medical Association, August 18, 1917, in which number the list is complete. As the Journal goes to practically every medical officer in the service your own medical officer would be very glad to lend you this copy from his magazine files, if he felt that you were really interested. In case he fails to have this particular number at hand, send 15 cents to the address given above and you will immediately be supplied with a copy.

The total number of medical students in the United States for the year ending June 30, 1917, excluding premedical, special, and post-graduate students, was 13,764, a decrease of 258 below last year. It is noteworthy, however, that in the high-grade (class A) medical colleges the total enrollment of medical students shows an increase, while in class B colleges the enrollments are practically at a standstill, and in class C colleges a marked decrease is noted. As indicated by the larger enrollments in the freshman and sophomore classes, the enrollment of medical students has about reached its lowest ebb under the higher entrance requirements.

Of the total number of 13,764 medical students in this country last year 12,925 (93.9 per cent) were in attendance at the regular colleges, 580 (4.2 per cent) at the homeopathic and 259 (1.9 per cent) at the eclectic colleges.

The hospital corpsman contemplating entering a medical college upon the completion of his term of enlistment, will doubtless be interested in knowing just where he stands as regards preliminary education. We quote verbatim from a preliminary report made by a special committee of the Council on Medical Education, which shows in detail the amount of work required for entrance to the medical and premedical colleges.

EDUCATION PRELIMINARY TO THE STUDY OF MEDICINE.

I. HIGH-SCHOOL REQUIREMENTS.

(a) For admission to the two-year premedical college course students shall have completed a four-year course of at least 14 (15 after Jan. 1, 1920) units in a standard accredited high school or other institution of standard secondary school grade, or have its equivalent as demonstrated by examinations conducted by the college entrance examination board, or by the authorized examiner of a standard college or university which has been approved by the

Council on Medical Education. Unless all the entrance units are obtained by examination a detailed statement of attendance at the secondary school and a transcript of the student's work should be kept on file by the college authorities. This evidence of actual attendance at the secondary schools should be obtained no matter whether the student is admitted to the freshman or to higher classes.

(b) The subjects for which credits for admission to the premedical college course may be granted are shown in the following schedule:

SCHEDULE OF SUBJECTS REQUIRED OR ACCEPTED FOR ENTRANCE TO THE PRE-MEDICAL COLLEGE COURSE.

Subject.	Units.	Required.
English literature and composition.....	3.4	3
Latin.....	1.4	.....
Greek.....	1.3	.....
French or German.....	1.4	2
Other foreign languages.....	2	.....
Mathematics:		
Elementary algebra.....	1	1
Advanced algebra.....	$\frac{1}{2}$ to 1	.....
Plane geometry.....	1	1
Solid geometry.....	$\frac{1}{2}$	.....
Trigonometry.....	$\frac{1}{2}$	.....
History (1 unit required):		
Ancient history.....	1	} 1
Medieval and modern history.....	1	
English history.....	$\frac{1}{2}$ to 1	
American history.....	$\frac{1}{2}$ to 1	
Civil government.....	$\frac{1}{2}$ to 1	
Science:		
Botany.....	$\frac{1}{2}$ to 1	.....
Zoology.....	$\frac{1}{2}$ to 1	.....
Chemistry.....	1	.....
Physics.....	1	.....
Physiography.....	$\frac{1}{2}$ to 1	.....
Physiology.....	$\frac{1}{2}$ to 1	.....
Astronomy.....	$\frac{1}{2}$	.....
Geology.....	$\frac{1}{2}$ to 1	.....
Agriculture.....	1	$\frac{1}{2}$
Bookkeeping.....	1	.....
Business law.....	$\frac{1}{2}$	.....
Commercial geography.....	$\frac{1}{2}$ to 1	.....
Domestic science.....	1 to 2	.....
Drawing, freehand and mechanical.....	$\frac{1}{2}$ to 2	.....
Economics and economic history.....	$\frac{1}{2}$ to 1	.....
Manual training.....	1 to 2	.....
Music: Appreciation or harmony.....	1 to 2	.....

A unit is the credit value of at least 36 weeks' work of four or five recitation periods per week, each recitation period to be of not less than 40 minutes. In other words, a unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject can not be accomplished under ordinary circumstances in less than 120 sixty-minute hours or their equivalent.

Of the 15 units of high-school work it is suggested that 8 units be required, as indicated in the above schedule, and that other work to the amount of at least 7 units may be made up from any of the other subjects of the above schedule.

A reading knowledge of French or German is required and should be obtained either in the high school or in college.

II. PREMEDICAL COLLEGE COURSE.

(c) Beginning January 1, 1918, the minimum requirement for admission to acceptable medical schools, in addition to the high-school work specified above, will be 60 semester hours of collegiate work, extending through 2 years, of 32 weeks each, exclusive of holidays, in a college of liberal arts and science approved by the Council on Medical Education. The subjects included in the two years of college work should be in accordance with the following schedule:

SCHEDULE OF SUBJECTS OF THE TWO-YEAR PREMEDICAL COLLEGE COURSE.

(Sixty semester hours required.)

Required courses:

	Semester hours.
Chemistry (a)	12
Physics (b)	8
Biology (c)	8
English composition and literature (d)	6
French or German (e)	6 to 12

Courses strongly urged:

Advanced algebra, solid geometry, and trigonometry	3 to 6
Additional courses in chemistry	3 to 6
An additional modern language, French or German (e)	6 to 12
Psychology	3 to 6
Advanced zoology, embryology, or comparative anatomy	3 to 6

Suggested elective courses: English (additional), economics, history, sociology, political science, logic, mathematics, Latin, Greek, drawing.

NEWS.

Enrollments in the Naval Reserve Force Hospital Corps have practically ceased, the districts having enrolled for the time being nearly all the hospital corpsmen they need for work within the district and on the vessels of the naval districts.

Enlistments in the regular Hospital Corps are still kept down to 125 a month, and it may be necessary to stop enlisting altogether for a time now that the corps is so nearly full. Men are still changing rate to the Hospital Corps in larger numbers than the corps is losing by change of rate to other branches. Upon first enrollment or first enlistment only the rate hospital apprentice (second class) or hospital apprentice (first class) is given, so that everyone starts at the same place and has an even chance.

Transfer of hospital corpsmen from the Hospital Corps schools to hospitals has been going on apace. Men who have had but three

months in school have been getting a month or six weeks in the hospital and then been sent to sea. From now on the normal periods of six months in a school and four to six months in a hospital will be gradually resumed.

Men go to sea first, as a rule, who enlisted first, and until a hospital corpsman has been at sea he can hardly be called a Navy man. Naval Reserve Force hospital corpsmen enrolled for general service are beginning now to go to sea on other than vessels of the naval district. This gives the Reserve Force man an equal opportunity with the regular to gain the experience necessary for advancement in rating. Unfortunately the Reserve Force man has generally been denied the advantage of going to a regular training station and to a regular Hospital Corps school, because of the overwhelming number of men in the Hospital Corps who last year filled the schools to overflowing. The various naval districts, however, have established training stations and schools for instruction, which in certain instances have given the reserve hospital corpsman a training fully as good as that given the regular. At sea no matter whether a hospital corpsman has enrolled in the Reserve Force or has come in through the National Naval Volunteers or the Fleet Naval Reserves or has enlisted in the Regular Establishment, his chance for promotion is the same as that of all other hospital corpsmen, and the best man should get to the top. There are many vacancies in the upper ratings of the Hospital Corps to-day, due to the fact that the Bureau of Medicine and Surgery and the medical officers of the Navy are desirous of keeping hospital corpsmen in the lower ratings until they have acquired sufficient experience as well as knowledge to be well qualified for the upper ratings.

A recent letter to the fleet calls attention to the shortage in the type of hospital corpsman capable of doing the first-aid work of a vessel to which no medical officer is attached. Every hospital corpsman in the fleet who has the necessary knowledge and experience to fill such a billet should work for advancement in rating until advancing, rate by rate, he holds the rate pharmacist's mate (first class), when he will probably be detached and sent elsewhere. The medical officers of the fleet have been asked to make every effort to train men for these billets.

Special intensive courses of instruction for the training of hospital corpsmen have been undertaken. With the marine forces at Quantico, Va., there is a course for the hospital corpsman assigned to duty with the marine forces. These men dig first-aid trench stations, learn the application of first-aid dressings, splints, etc., in the field; receive practical instruction in field hygiene and sanitation of the camp, conservancy, etc. At other stations hospital corpsmen with

marine forces are being taught along similar lines. The University of Minnesota medical department is giving a special course of instruction to 100 hospital corpsmen who had already had three months' training at a Hospital Corps school. Look out for the men sent to this school, for when they come to sea they may beat you in the race toward advancement in rating. The instruction given by the College of Pharmacy of Columbia University, New York City, which lasted about nine weeks, is now over, and it is believed that those who had the advantage of this training have turned out very well. Hospital Corps schools at regular naval training stations have now resumed their six months' period of instruction and are still very full of men. Probably they will not reach the normal number of about 200 in each school until next summer, and an advanced course of instruction for hospital corpsmen, probably none below the rate of pharmacist's mate (first class) is now contemplated. If this plan is put into operation, the pharmacist's mate (first class) fortunate enough to be sent there will have the opportunity of receiving practical instruction of a very interesting character. Those who go will be selected only from among the best men, and only the best men will receive the good billets after leaving this school. A few hospital corpsmen are being intensively trained for first-aid work in connection with sea-plane, balloon, and dirigible activities. In naval districts men are being especially trained for district needs. Train, train! School, school! The man who does not want to study to learn and to work hard will have small success in the Hospital Corps.

THE RIGHT KIND OF DOCTOR AND THE WRONG KIND OF HOSPITAL CORPSMAN.

Recently a letter was received from a medical officer as follows:

I received a pharmacist's mate (first class) * * * He started out very beautifully and worked as though he was going to make good, but also started in to drink up my alcohol and whisky while on duty. * * * I reported him to the commanding officer, who ordered him put under guard and to be court-martialed. I will bring charges of being under the influence of intoxicating liquor while on duty and theft of whisky used for medicinal purposes. While I have not been in the service of the Navy very long * * * I am of the opinion that such a man is rather dangerous around drugs and is no asset to this outfit. * * * If there is any criticism of my action, please let me know at once.

A reply somewhat as follows was made: "Fine! You have done just right." The Bureau of Navigation's Annual Circular, 1917, states, on page 13: "No person will be retained in the Hospital

Corps who is addicted to the use of intoxicating liquors or at any time shows evidence of intemperance."

"HOMESICK" TO BE BACK.

In a letter in which he states his desire to come back into the Hospital Corps of the Navy, Ex-Hospital Apprentice (First Class) W. R. McElroy writes:

You have told me a time or two before that I did not appreciate the advantages of the Hospital Corps of the Navy. I agree with you completely; I didn't. I'm so homesick to be back in a sick bay, or a "seagoing dispensary," that a four-year enlistment would look mighty good to me.

I wanted you to know that I have kept in touch with the duties of the hospital corpsman; in fact, have made a pretty good living from information gained in the Hospital Corps.

REENLISTMENTS.

Having published in the last issue of the SUPPLEMENT a summary of the new enlistments in the Hospital Corps it will perhaps be of interest to follow it in this issue with a summary of the reenlistments in the corps since January 1, 1917.

Since that date the number of "old men" who have come back, having decided that the Hospital Corps of the Navy was the best place for them, is as follows: Chief pharmacist mates, 48; pharmacist's mates (first class), 32; pharmacist's mates (second class), 75; pharmacist's mates (third class), 32; hospital apprentices (first class), 34. Making a total of 221.

Of this number 15 reenlisted in the month of January, 16 in February, 15 in March, 23 in April, 17 in May, 37 in June, 28 in July, 28 in August, 21 in September, and 18 in October.

By comparing these figures, representing the reenlistments, with the figures published in the last issue of the SUPPLEMENT, representing the new enlistments, it will be noted that they run approximately in the same proportion. Or, in other words, the "veterans" felt the same call to the colors that had been heard by so many of the country's young men and naturally came forward and reenlisted.

COLLECTING NEWS.

In the last issue we published a short paragraph asking for pictures, news items, suggestions, and written articles for this publication. In this issue we are writing about the same subject. We want

you to cultivate a "nose for news." Find out what is going on around you that will be of interest to the Hospital Corps and then write us about it.

Do you feel any pride in your particular station or ship, and think that you could write something about your work that would benefit other members of the corps? Do you want to keep in touch with your fellow corpsmen in different parts of the service? Do you want to keep alive to your opportunities both in and out of the service? If you do, the SUPPLEMENT gives you your chance. Its pages are open to you and it is hoped that you will help to make it a real force in the Hospital Corps. We repeat: Cultivate a "nose for news," and benefit both yourself and other members of the corps.

The SUPPLEMENT will publish only material that is of especial interest and benefit to the Hospital Corps, the editor reserving the right to turn over to other Navy magazines or papers material which is of interest to the Navy at large, rather than to the Hospital Corps in particular. Owing to the uncertainty of mail transmission the editor does not assume responsibility for the return of pictures, articles, etc., contributed.

Address all contributions to:

EDITOR OF THE SUPPLEMENT,

Bureau of Medicine and Surgery.

Navy Department,

Washington, D. C.

CLIPPINGS.

POISON TABLETS OF CORROSIVE SUBLIMATE.

The readiness with which the public accepts and the drug trade adapts itself to the legal pronouncements of the pharmacopœia has been shown by the universal acceptance of the official standard for poison tablets of corrosive sublimate. The prompt disappearance from the drug stores of the formerly extensively used white disk shape of sublimate tablets has minimized the danger of accidental poisoning from this source which was for a time so prolific of fatalities.—*The Western Druggist, September, 1917.*

RELATIVE TOXICITY OF STOVAINE AND NOVOCAINE.

According to Hatcher and Smith, who have given considerable attention to the study of these two drugs, stovaine is slightly more toxic than novocaine when administered in like manner. Recovery from toxic doses of stovaine is not so prompt as from corresponding

doses of novocaine. They found no evidence to show that stovaine exerts any direct action on the blood vessels after the intravenous injection of it in cats and practically none of the drug was excreted unchanged in the urine of these animals. Stovaine, they say, causes death by bringing about immediate and simultaneous paralysis of the heart and respiration, the action of each being independent of that on the other.—*Journal of Pharmacology, September 4, 1917.*

STERILIZATION OF COCAINE SOLUTIONS.

Baumeister (*Klin. Monatsbl. f. Augenheilk.* through *Pharm. Weekbl.*) reports on a number of cases of serious inflammation of the eyes after operations in which cocaine solutions had been used as an anesthetic. He attributes this inflammation to the solutions not being completely sterile, and advises not to keep any stock solutions of cocaine hydrochloride and to use freshly made solutions boiled for three minutes immediately before use. Tyndalyzing, he asserts, does not render the solutions sterile, and heating for any length of time at a higher temperature produces decomposition of the alkaloid. Ebert (*Pharm. Zeit.* through *Pharm. Weekbl.*), however, claims that cocaine solutions can be sterilized in a current of steam without decomposition for three-quarters to one hour, provided the sterilization is carried out in alkali-free glass containers.—*The Druggists' Circular, October, 1917.*

COAGULATION OF COW'S MILK IN THE HUMAN STOMACH.

Brennemann (*Arch. Pediat.*) says that cow's milk curdles in the stomach within a few minutes. The small curds at first formed coalesce and aggregate for about two hours, then decrease from digestion, but are still present after five hours. The curds of raw milk are large and hard; those of boiled milk, soft and small; pasteurized milk gives curds between the two in consistence but more like those of raw milk. Raw milk is a very solid food; boiled milk is a semiliquid one. Milk swallowed very slowly forms a larger curd than when taken quickly. Alkalies and sodium salts very greatly inhibit coagulation and even stop it completely if present in sufficient amount. Dried or condensed milk forms a minimum of curd. Starchy decoctions, such as barley water, have a decided influence in lessening the size of the curd, much more so than simple watery dilution. Soluble carbohydrates such as sucrose, maltose, and lactose have no appreciable effect.—*The Druggist Circular, September, 1917.*

BACTERIOLOGICAL WORK TO BE DONE.

The majority of people first consult, or only consult, general practitioners; the greatest portion of medical and surgical service in America is rendered by general practitioners. The circumstances that govern physicians engaged in general practice are such that the vast majority of them can not now, nor for a long time to come, make these tests themselves. State and municipal health departments have recognized this and attempted to alleviate this condition, but the nature of the problem makes it impossible for them to do so. By legitimate and illegitimate means many hospitals have unsuccessfully endeavored to do all the work of this character in their respective communities. Most improperly and with no better success, several firms manufacturing biological products have attacked the problem. A few county medical societies have established laboratories to do this work for their members. But most of the work remains undone.

Whoever solves this problem so that a physician or patient can obtain necessary laboratory tests under the same conditions and with the same ease that they can at present have a prescription filled will enhance the public health and render a service to humanity and the medical profession as great as did Behring when he gave us diphtheria antitoxin; Wassermann, when he gave us the test for syphilis; and Ehrlich, when he gave us salvarsan.

The retail pharmacist is in a position to do this work with more satisfaction to physician and patient for a much smaller fee than can anyone else provided he is competent to render such service. He can make a much larger profit from it than from many of his other activities, and the work itself is more enjoyable and uplifting than many of his present occupations.—*The Western Druggist, September, 1917.*

PUBLIC HEALTH INSTRUCTION IN MEDICAL SCHOOLS.

Rosenau (Journ. Am. Med. Asso.) says that most medical schools have not met their full responsibility with reference to the teaching of hygiene. Only four or five of them treat it as a major subject. It must be clearly kept in mind that the object of such courses in the general medical school is not to make health officers. It would broaden the training and better equip them for general practice. Special training for a public health degree calls for special courses, and even special schools. When a patient consults a physician, he wants to know two things: First, what is the matter with him, and second, what can be done to relieve him. Many medical schools accept this function of the physician of diagnosis and treatment as

final and devote most of their time to the practical art. The necessity of being able to answer these questions is recognized by the students, but the more general point of view of the sanitarian is not so well considered. There is constant overlapping and interlocking of the work of the practitioner and of the sanitarian, and the advantages of the hygienic training is evident. Public health is mere general health in the aggregate. The young medical practitioner soon will find that he will be embarrassed by questions of personal hygiene, and besides this he has in his relations to the community many times to answer questions in this line, and the better advice that he can give the better he will succeed, and his responsibility does not end here, for he must extend his services to the community. The teaching of preventive medicine and hygiene must be used to broaden the point of view of the practitioner and teach him his duties in this respect. Readjustment of the medical curriculum, which tends to be overcrowded, can be made through cooperation with other departments, and the author goes over the courses as given in the few medical institutions he names. No course in public health, he thinks, can be regarded as satisfactory that leaves the student altogether satisfied with our present knowledge of the subject, and he emphasizes the encouragement of a spirit of research in this department. The suitable students should be encouraged as their aptitudes are developed. Every class in the medical school has a few students whose idealism is such that the prevention of suffering makes to them a particular appeal.—*The Druggists' Circular, September, 1917.*

PHARMACY IN THE MAKING.¹

To Egypt is given the credit, as a rule, for having been the birth-place of what has come to be our modern pharmacy. The ancient name for Egypt "chem," meaning the black land, has been taken to form the root of the word "chemistry," indicating a connection between chemistry and so-called black art or alchemy.

Egyptian medicine was made up very largely of the prescription of magic, amulets, invocations, etc. Many herbs were used as medicines under symbolic names; for instance, the ivy was called the plant of Osiris, vervain was called tears of Isis, saffron was called the blood of Thoth, and the humble equill was known as the eye of Typhon.

The Egyptian drugs included oil, wine, beer, yeast, turpentine, myrrh, opium, wormwood, aloes, vinegar, cummin, fennel, anise, peppermint, cassia, caraway, coriander, linseed, juniper berries, henbane, and mandragora. Of minerals, iron, lead, magnesia, lime, soda, niter, and vermilion were employed.

The Egyptians used olive oil largely, and so did the Israelites before they went into Egypt. There is a legend that when Adam was

¹ Drug Topics.

in his nine hundred and thirtieth year he was seized with a violent pain in his stomach. He told Eve to take Seth, go as near as they could to the garden and pray God to permit an angel to bring them some oil from the tree of mercy so that he might anoint himself therewith and be free from pain.

Hippocrates, the father of medicine, used many drugs, but was especially careful to look after the diet and sanitation of his patients.

In Rome there were traveling drug sellers, and the ordinary name for a drug store in Rome was seplasia. The early Greek and Roman physicians dispensed almost entirely, and it is worthy of note that Pliny reproached Roman physicians for purchasing medicines without knowing of what they were composed.

The Arabs, after the fall of the Roman Empire, contributed very largely to the development of chemistry and pharmacy. To the Arabs we owe the names of alcohol, julep, sirup, sugar, and through them came the use in medicine of rhubarb, camphor, mustard, nutmegs, cloves, cassia. They were the first to distill rose water and to establish pharmacy.

Even from the time of Haroun Al Raschid there is evidence that the government controlled the quantity and price of medicine sold. In fact, Arabs raised pharmacy to the dignity of its being considered practically a profession. As early as 1250, under an edict of Frederick II, the Holy Roman Emperor and King of Sicily, physicians were strictly forbidden to enter into any arrangement with the druggist whereby they would derive any profit from the sale of medicaments, nor was the doctor himself allowed to conduct a pharmacy. In fact, in Augsburg in 1445, there was a female apothecary who received a salary paid to her by the city. In France apothecaries were in business as such before 1250.

In the fourteenth century the apothecary of Paris had to give oath not to give a remedy or purge without the consent of a physician. English pharmacy was slow to develop, and as late as 1680 the following chemist's advertisement was in use:

Ambrose Godfrey Hanckwitz, chemist in London, Southampton Street, Covent Garden, continues faithfully to prepare all sorts of remedies, chemical and galenical. He hopes that his friends will continue their favors. Good cordials can be procured at his establishment, as well as Royal English drops, and other articles, such as Powders of Kent, Zell, and Contrajerva. Cordial red powder, Gaskoins powder, with and without bezoar, English smelling salts, true Glaubers salt, Epsom salt, and volatile salt of ammonia, stronger than the former. Human skull and hartshorn, essence of Ambergris, volatile essence of lavender, musk, and citron, essence of viper, essence for the hair, vulnerary balsam, commendeur, balsam for apoplexy, red spirit of purgative cochliaria, spirit of white cochliaria, and others. Honey water, lavender water of two kinds, Queen of Hungary water, orange flower water, arquebusade.

For the information of the curious, he is the only one in London who makes inflammable phosphorus, which can be preserved in water. Phosphorus of

Bolognian stone, flowers of phosphorus, black phosphorus, and that made with acid oil, and other varieties. All unadulterated. Every description of good drugs he sells, wholesale and retail. Solid phosphorus, wholesale, 50s. an ounce, and retail, £3 sterling, the ounce.

The Society of the Apothecaries was given a charter in 1617. There arose shortly after a violent and long-continued dispute between the doctor and apothecary, due very largely to mutual jealousy. Pope wrote in 1709:

Modern pothecaries, taught the art
By doctors' bills to play the doctors' part,
Bold in the practise of mistaken rules,
Prescribe, apply, and call their masters fools.

It is worthy of note that the apothecaries refused to leave their post during the great plague in London in 1675, when most of the doctors were glad to flee from the city.

It was on record that in 1703 apothecaries had been known to make £150 out of a single case. In one instance an apothecary made as high as £320 (certainly those were good old days). One apothecary's bill for five days amounted to £17 and over.

The end of the long struggle between doctor and druggist finally culminated in a celebrated trial, as a result of which apothecaries became recognized medical practitioners and were granted medical diplomas by the College of Physicians.—*Practical Druggist, September, 1917.*

DESTRUCTION OF FLY LARVÆ IN MANURE.

No doubt the logical way to get rid of the ubiquitous fly is to destroy him before he reaches his full development. Therefore the results of the United States Department of Agriculture's experiments as to the best way in which to destroy the larvæ, should be of interest. After three seasons the department feels safe in saying that one of the most efficient substances for this purpose is borax. Two pounds of this chemical to 28 gallons of water, which should be sufficient for 24 bushels of manure, is the most effective and cheapest of all the many substances tried. However, it must be used with a great deal of care, for if the manure is to be used for fertilizing purposes an excessive amount of the borax will be very prone to have an injurious effect on growing plants. They also found that 8 ounces of green hellebore to 10 gallons of water for the treatment of 8 bushels of manure, is also effective. Of course, the cost is somewhat higher. Calcium cyanamide was also found to be of value for this purpose, a half pound of it to each bushel being the proper proportions. While the cost of this is higher, the manurial value is considerably increased; it is as well to add to it, then, at least half a pound of superphosphate, as this chemical prevents the loss of ammonia by the action

of the cyanamide, and in turn this adds to the increase of the phosphorus content. Good results were also obtained with solutions of aniline and emulsions of nitrobenzene with fish-oil soap, this being found to be without harm to the fertilizing value of the manure. They advise against the use of such potent substances as potassium cyanide, Paris green, arsenic sheep dip, and pyridine, it being claimed that these substances are too dangerous. (F. C. Cook and R. H. Hutchinson in U. S. Dept. Agr. Bull. 408.)—*American Journal of Pharmacy*, June, 1917.

HOSPITAL CORPSMEN COMMENDED.

BUREAU OF MEDICINE AND SURGERY,

October 2, 1917.

GENTLEMEN: The Secretary of the Navy has received your letter of September 6, in which you express thanks and appreciation of the Navy's medical representative at Fort Mifflin, Chief Pharmacist's Mate A. J. Ransom, for "his prompt and efficient attention to two of your most valuable men who were injured," and it has been referred to this bureau for reply.

Your letter of commendation has been placed on file in this bureau, and it is appreciated.

Yours, very truly,

(Signed)

W. C. BRAISTED,

Surgeon General, United States Navy.

MACARTHUR CONCRETE PILE & FOUNDATION Co.,

120 Broadway, New York, N. Y.

COMMENDATION.

Medical officer on board U. S. S. —, operating in British waters, writes:

"A submarine on * * * attacked a British merchant steamer. The U. S. S. * * * received a radio for a doctor. Three men from the British ship were transferred to the U. S. S. * * * seriously injured. Chief Pharmacist's Mate E. C. Ware rendered valuable assistance both in transferring the patients and during the whole treatment aboard ship and could, in my opinion, have handled them quite well alone."

HOSPITAL COMPANY'S CONTRIBUTION

Presented to the Hospital Company's Board

October 1, 1917

Dear Sirs: The Secretary of the Navy has received your letter of September 6, in which you express thanks and appreciation of the Navy's medical representatives in Port Moresby. Chief Physician A. J. Haines, for "his prompt and efficient attention to the most reliable men who were injured," and it has been referred to the Bureau for reply.

Your letter of recommendation has been placed on file in this Bureau. It is appreciated.

Yours very truly,

(Signed)

W. C. Haines

Surgeon General, United States Navy

Atlantic Oceanic Line & Navigation Co.

120 Broadway, New York, N. Y.

COMBINATION

Medical officer on board U. S. S. — operating in British waters.

* A submarine on * * * * * attached a British merchant steamer. The U. S. S. * * * * * received a radio for a doctor. Three men from the British ship were transferred to the U. S. S. * * * * * seriously injured. Chief Physician's Mate E. C. Wain received valuable assistance both in transferring the patients and during the whole treatment aboard ship and could, in my opinion, have handled them quite well alone."

USEFUL BOOKS.

For the benefit of the men in the Hospital Corps who want to improve themselves by studying in their spare time we are publishing in this issue a list of books that are recommended.

Books on medical subjects are issued when required by medical officers on Form B, page 20, for the library of the medical department of a ship or station. At this time the books issued are:

Anatomy, Gray.
Bacteriology, Stitt.
Dispensary, National.
Dictionary, Medical, Gould.
Drill Regulations for the Hospital Corps, Navy.
Eye, Ear, Nose, and Throat, Ballenger.
Genito-Urinary, Guiteras's Urology.
Handbook for Hospital Corps (Army), Mason; (Navy), Kaufman.
Hygiene, Gatewood.
Manual for the Medical Department, Navy.

Medicine, Practice of, Hare.
Pharmacopœia (Standard).
Pharmacy, Army.
Surgery, Wharton.
Tropical Diseases, Stitt.
Modern Surgery, Da Costa.
Diseases of the Skin, Stelwagon.
Chemistry, Simon.
Food Analysis, Leach's (or similar text).

For the ambitious hospital corps man who might be sufficiently interested to want to buy a few books on his own account the following list (with publishers and prices) is given:

The Landing Force and Small-Arm Instructions, United States Navy, 1915. Naval Institute, Annapolis, Md. \$1.

Useful Drugs, 1916. American Medical Association, 535 Dearborn Street, Chicago, Ill. 50 cents.

The Boys Venereal Peril, issued by the Council on Health and Public Instruction of the American Medical Association, 1910. 535 Dearborn Street, Chicago, Ill.

Drill Book for the Hospital Corps of the United States Navy, 1915. Government Printing Office, Washington, D. C. 65 cents.

How to Live, Fisher & Fisk. Funk & Wagnalls, New York. \$1.

Alcohol—Its Relation to Human Efficiency and Longevity, Fisher & Fisk, Funk & Wagnalls, New York. \$1.

Practical Nursing, Sanders. W. B. Saunders Co., Philadelphia, Pa. \$2.50.

Surgical Nursing in War, Bundy. P. Blakiston's Son & Co., Philadelphia, Pa. 75 cents.

Outlines of Nursing History, Goodnow. W. B. Saunders Co., Philadelphia, Pa. \$2.

Bandaging, Whiting. W. B. Saunders Co., Philadelphia, Pa. \$1.25.

Field Hygiene and Sanitation, Ford. P. Blakiston's Son & Co., Philadelphia, Pa. \$2.

The Elements of Military Hygiene, Ashburn. Houghton, Mifflin Co., Boston and New York. \$1.50.

The Operating Room, Smith. W. B. Saunders Co., Philadelphia, Pa. \$1.50.

Chemistry and Toxicology for Nurses, Asher. W. B. Saunders Co., Philadelphia, Pa. \$1.25.

Sanitation in War, Lelean. B. Blakiston's Son & Co., Philadelphia, Pa. \$2.

The benefit of the work in the Hospital Library who want to
 are themselves by studying in their spare time, we are glad to
 be a list of books that are recommended.
 on medical subjects are listed when required by medical
 in Form B, page 20, for the library of the medical depart-
 ment of the station. At the end of the book bound are:

1. <i>Principles of Medicine</i> , by W. H. Saunders, Philadelphia, 1914.	2. <i>Principles of Surgery</i> , by W. H. Saunders, Philadelphia, 1914.
3. <i>Principles of Obstetrics</i> , by W. H. Saunders, Philadelphia, 1914.	4. <i>Principles of Pediatrics</i> , by W. H. Saunders, Philadelphia, 1914.
5. <i>Principles of Pathology</i> , by W. H. Saunders, Philadelphia, 1914.	6. <i>Principles of Pharmacology</i> , by W. H. Saunders, Philadelphia, 1914.
7. <i>Principles of Bacteriology</i> , by W. H. Saunders, Philadelphia, 1914.	8. <i>Principles of Hygiene</i> , by W. H. Saunders, Philadelphia, 1914.
9. <i>Principles of Radiology</i> , by W. H. Saunders, Philadelphia, 1914.	10. <i>Principles of Dermatology</i> , by W. H. Saunders, Philadelphia, 1914.
11. <i>Principles of Ophthalmology</i> , by W. H. Saunders, Philadelphia, 1914.	12. <i>Principles of Otorhinolaryngology</i> , by W. H. Saunders, Philadelphia, 1914.
13. <i>Principles of Urology</i> , by W. H. Saunders, Philadelphia, 1914.	14. <i>Principles of Gynecology</i> , by W. H. Saunders, Philadelphia, 1914.
15. <i>Principles of Neurology</i> , by W. H. Saunders, Philadelphia, 1914.	16. <i>Principles of Psychiatry</i> , by W. H. Saunders, Philadelphia, 1914.
17. <i>Principles of Social Medicine</i> , by W. H. Saunders, Philadelphia, 1914.	18. <i>Principles of Public Health</i> , by W. H. Saunders, Philadelphia, 1914.
19. <i>Principles of Preventive Medicine</i> , by W. H. Saunders, Philadelphia, 1914.	20. <i>Principles of Therapeutics</i> , by W. H. Saunders, Philadelphia, 1914.

The medical and hospital staffs may wish to be notified in
 order to want to buy a few books on the above subjects the following
 (with publishers and prices) is given:

1. <i>Principles of Medicine</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	2. <i>Principles of Surgery</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
3. <i>Principles of Obstetrics</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	4. <i>Principles of Pediatrics</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
5. <i>Principles of Pathology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	6. <i>Principles of Pharmacology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
7. <i>Principles of Bacteriology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	8. <i>Principles of Hygiene</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
9. <i>Principles of Radiology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	10. <i>Principles of Dermatology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
11. <i>Principles of Ophthalmology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	12. <i>Principles of Otorhinolaryngology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
13. <i>Principles of Urology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	14. <i>Principles of Gynecology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
15. <i>Principles of Neurology</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	16. <i>Principles of Psychiatry</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
17. <i>Principles of Social Medicine</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	18. <i>Principles of Public Health</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.
19. <i>Principles of Preventive Medicine</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.	20. <i>Principles of Therapeutics</i> , by W. H. Saunders, Philadelphia, 1914. \$2.50.

PROMOTION.

Knowledge acquired by study and observation; experience gained in work of the corps; ability to stand out from the crowd; ability to handle men carefully; willingness and ability to do things; trustworthiness, dependability, and good judgment are the qualities which should be and are recognized by promotion. The hospital corpsman who is a slacker or who is careless, unreliable, thoughtless, should not be advanced in rating, and whenever possible, such a man, if advanced, should be disrated. Since the last issue of the supplement the Bureau of Medicine and Surgery has received information that the following men have been promoted:

TO PHARMACIST'S MATE, FIRST CLASS.

Akerberg, K. H.	Freeman, H. K.	Miller, A. L.
Alderman, H. S.	Freeman, W. P.	Miller, E. E.
Alexander, V. H.	Gardner, J. D.	Miller, J. I.
Allen, D. Le-R.	Gardner, R. C.	Minear, E. W.
Armes, R. P.	Gemme, H. F.	Moody, J. A.
Arthur, J. L.	Gillis, A. P.	Moore, J. E.
Arveritt, J. T.	Glassman, K. C.	Myers, W. W.
Ballou, L. H.	Gowder, H. C.	Neuman, C. W.
Barker, R. M.	Graham, E.	Newton, R. H.
Barr, R. F.	Graham, F. H.	Niles, E. M.
Bennett, H. M.	Griffith, A. F.	Noonan, W. W.
Bennett, J. P. T.	Griffith, H. D.	Norman, G. J.
Berry, R. A.	Grinnan, H. D.	Norton, D. H.
Blood, L. T.	Griset, V. A.	Nostrand, G. W.
Boner, T. J.	Gulliaum, W. W.	Olinger, J. B.
Bowling, B. H.	Hanley, M. L.	Osborn, L. H.
Breul, V. E.	Harrington, H. D.	Osiek, P. H.
Brown, F. M.	Harrington, R. A.	Owen, C. H.
Burroughs, R. McH.	Hatter, M.	Owings, C. B.
Carr, R. A.	Henwood, W. B.	Parker, J. F.
Clanton, W. C.	Hill, W. W.	Partain, T. J.
Cochrane, R. S.	Holmes, E. B.	Patrick, R. A., jr.
Cole, J. E.	Holtry, F.	Petersen, R. C.
Colson, V. M.	Hudnall, S. I.	Pittman, O. L.
Cronk, P. B.	Jackson, H. G.	Poe, J. W.
Crowl, H. G.	Jackson, H. K.	Powell, D. B.
Cunningham, J. T.	Janda, E. C.	Proudfoot, J. L.
Cuson, C. V.	Jarvis, J.	Ragan, W. E.
Cuthbertson, H.	Jefferies, W. B.	Rasmussen, A. E.
Darby, F. G.	Jones, A. W.	Reed, W. J.
Davis, E. A.	Jones, E. E.	Reese, P. T.
Davis, J. L.	Kane, H. M.	Riegel, G. L.
Dettmer, Paul.	Kelly, T. R.	Roberts, C. J., jr.
Dickason, E. W.	Kennedy, J. A.	Rogers, R. C.
Dickinson, W. H.	Kerman, P. E.	Saunders, T. McL.
Dickson, L.	King, R. L.	Scarborough, J. E.
D'Mare, D.	Kipp, R. H.	Schneider, W. C.
Donaldson, W. H.	Kitchens, J. B.	Schobert, W. LaM.
Downer, M. B.	Klinger, H. J.	Scholle, C. G.
Edstrom, S.	Kraft, F. H.	Schultheis, W., jr.
Fagan, J. E.	Lance, L. H.	Skillman, H. W.
Fenneman, A.	Larsh, L. A.	Smith, H. W.
Finch, L. W.	Leckie, R. G.	Smith, Wm. Briggs.
Flash, T. F.	Livingston, H. W.	Starrett, H. L.
Forni, J. P.	McCleary, C. B.	Stone, R. O.
Frank, H. J.	McGinnis, P. D.	Stoner, R. V.
Fream, W. R.	Mason, R. K.	Storkan, O.

Strong, S. F.
Swartz, M. E.
Sziklay, E.
Thomas, J.
Titzel, L. B.
Toben, J. A.
Tracey, J. H.
Trasher, L. G.

Upson, P. K.
Wadsworth, D. E.
Walton, J. H.
Ward, R. E.
Webb, C. O.
Wells, A. J.
Werner, C. H.
Wheeler, H. E.

Whitbeck, C. H.
Williams, L. E.
Williams, O. R.
Wolcott, T. F.
Woodham, G. C.
Wright, V. F.

TO CHIEF PHARMACIST'S MATE.

Allen, J. J.
Arnesen, O. W.
Barker, R. M.
Beal, H. C.
Bennet, J. P. T.
Bostic, S. C.
Bowling, B. H.
Breulinger, L.
Byron, W. C.
Cameron, E. B.
Chenkin, S.
Corder, W. T.
Cuthbertson, H.
Darby, F. G.
Dempsey, J. J.
Downer, M. B.
Drewing, R. E.
Dungan, E. E.
Fay, C. S.

Fitzhugh, C. S.
Forni, J. P.
Freeman, H. K.
Gedney, C. N.
Griffith, G., jr.
Hammer, R. J.
Haynes, W. G.
Hill, W. W.
Jackson, H. K.
Johnson, G. H.
Junke, W. A.
Kitchens, J. B.
Leninger, C. F.
McDaniel, W. T.
McGee, T. W.
McLean, N. H.
Maire, C. E.
Miller, E. E.
Nall, E. R.

Niles, E. M.
Parrish, J. I.
Reed, R. E.
Ricklefs, F. C.
Robinson, C. G.
Rude, Jesse.
Scher, D. B.
Stanley, A. M.
Stimson, J. H.
Stone, R. O.
Stonehouse, C. A.
Stoner, R. V.
Stritzinger, W. M.
Taylor, T. S.
Walton, J. H.
Wentworth, J. H.
Whitbeck, C. H.
Wolford, H. W.
Zimmerman, R. O.

The following men have been recommended by the boards by which they were examined, but as yet the Bureau of Medicine and Surgery has received no information of their actual promotion:

TO PHARMACIST'S MATE, FIRST CLASS.

Amato, L. I.
Anderson, C. S.
Beach, W. R.
Beamer, C. F.
Bedard, W. R.
Bollerup, E. R.
Carlsen, F. H.
Carlson, F. J.
Clark, T. H.
Cope, M. B.
Cornell, W.
Couch, C. L.
Crabtree, L. J.
Dean, W. R.
Delling, Fred.
Dent, M. E.
Dixon, E. C.
Dorenbohm, J.
Fabian, W. D.
Fleck, G. W.
Fiehland, P. H. E.
Foll, E. F.

Foote, E. L.
Fouch, D. W.
Fox, T. P.
Garber, D. W.
Gardner, J. C.
Goodwin, C. D.
Gore, H. C.
Gwynn, A. S.
Hammer, S. Q.
Hickok, H. C.
Holton, C. O.
Huguennin, E. D.
Hutchins, C. L.
Jamison, R. R.
Johnson, G. H.
Latta, E. C.
Lemke, G. F. W.
Lewis, W. D.
McClendon, S. J.
McLean, N. H.
Mattingly, C.
Milliron, E. O.

Moore, A. H.
Moore, E. M.
Neuffer, L. W.
Nichols, F. C.
Orr, A. V.
Pace, Noah.
Pawloski, H.
Pryor, J. H., jr.
Rollins, R. H.
Rotchford, F. H.
Scheer, J. W.
Schulze, F. H.
Simpson, J. F.
Smith, J. B.
Smith, J. H.
Troy, J. J.
Waters, R. A.
Weiss, P. F.
Wentworth, C. E.
Williford, H. L.
Wilson, Guy A.
Wolford, H. W.

TO CHIEF PHARMACIST'S MATE.

Anderson, F. H.
Ashby, R.
Baker, E. R.
Barker, W. L.

Bedard, W. R.
Bell, J. H.
Bollerup, E. R.
Buzhardt, A. M.

Cameron, J. J.
Campbell, J. R.
Connell, L. M.
Cronk, P. B.

Dean, C. M.
Field, C. K.
Flynn, E. W.
Harper, W. A.
Hollva, W. S.
Hostetter, W.
Jarvis, H. W.
Jenkins, A. M.
Kane, H. M.
Kelley, J. J.
Lane, J. McR.
Leonard, A. G.
Lucy, H. J.
Mahood, H. F.

Meese, C. E.
Metzker, S. C.
Moody, J. A.
Mouton, A. J.
Norton, D. H.
Osiek, P. H.
Proudfoot, J. L.
Rollins, R. H.
Rugg, S. M.
Sanson, W. H.
Scheer, J. W.
Schenck, J. F.
Schultheis, W., jr.
Scott, R. A.

Shabek, L. F.
Shircliff, C. A.
Sperling, M. W.
Stoner, W. M.
Streets, S. L.
Strong, S. F.
Thompson, R. V.
Titzel, L. B.
Tousic, H. S.
Tracey, G. M.
Walker, L. M.
Ward, J. L.
Wilke, E. C.
Wilkey, E. P.

CORRESPONDENCE COURSE FOR NAVAL PHARMACISTS.

By H. L. DOLLARD, Passed Assistant Surgeon, United States Navy.

Since July 1, 1917, the number of chief pharmacists and pharmacists on the active list has increased from 23 to about 200, while the enlisted personnel of the Hospital Corps has increased from 1,562 to 7,000. This enormous increase was accompanied by, and in great measure due to, the inauguration of a state of war.

Such increase as this during such a short period would, even in time of peace, create many problems in readjustment and in regard to the qualifications of the warrant grade as a whole, as well as of the individual officers.

The problem presenting to a medical supply depot in time of peace, when easily obtainable supplies were sent by prompt vehicles of transportation to a ship or fleet on a peace basis, is vastly different from that of obtaining far greater quantities of supplies which have become more difficult to find and of transporting them to a far greater fleet or to individual ships at remote points.

Problems of clerical work, pharmaceuticals, commissary, and Hospital Corps control and instruction in a naval hospital or hospital ship which were well solved with 150 patients in time of peace become vastly more difficult when that hospital, in time of war, is called upon to provide for 1,000 patients, many of them perhaps wounded, with a corresponding increase in Hospital Corps personnel.

But it is not merely that problems have increased in degree; entirely new problems have arisen. The European war began by being revolutionary as compared with any prior war, and has since developed into a war of highly developed specialties. Not only are previously practiced methods of warfare now carried out on a far greater scale, but new methods have been developed, and these new methods inevitably create new problems to those branches of the naval service whose function it is to uphold the fighting force.

Under the system which existed in our Navy prior to the war pharmacists with few exceptions served only on shore, in hospitals and supply depots. But this system of detail is rapidly changing and pharmacists are now found serving ashore, afloat, and in the field. Furthermore, it must be remembered that we have now only 23 warrant officers and few more than 1,000 enlisted hospital corpsmen who had any practical experience in their present rank or rate prior to one year ago.

New hospitals and hospital ships have been commissioned; new medical supply depots are being established; the wants of new training stations and training camps must be satisfied; sanitary safeguards and medical care must be provided for expeditionary forces in the field; new bacteriological and chemical laboratories are being established and equipped; thousands of recent recruits of the Hospital Corps must be instructed and made proficient in their duties within a minimum period of time; the sanitary needs of a greatly increased number of navy yard employees must be met; X-ray apparatus must be provided, installed, and operated.

In these and other fields of endeavor the warrant officers of the Hospital Corps must render greater assistance to the medical officers than ever before.

To obtain the best results, it is necessary that a system of general and specialized instruction be established. It is necessary that the special knowledge possessed by the various officers be made available to all officers. It is especially desirable that the recently warranted officers be given every opportunity to perfect themselves in their new duties. While it would unquestionably be of immense benefit if these officers could be ordered to a school for instruction in person, it is evident that such a step is not practicable at this time.

To meet this situation, it has been recommended by the Bureau of Medicine and Surgery and approved by the Bureau of Navigation, that a correspondence course for naval pharmacists be established. This course will be directed under the administration of the Bureau of Medicine and Surgery by a medical officer in collaboration with several pharmacists who have special knowledge and experience along certain lines.

Question papers will be sent out at intervals of about three weeks, the answers to which will be criticized and returned to the participants, with a detailed answer to the questions. Subject matter for study in the preparation of answers will be provided as required, and the pages of the SUPPLEMENT will be used in connection with the course.

All chief pharmacists and pharmacists, permanent and temporary, and officers temporarily appointed assistant surgeons from the grade of pharmacist will be enrolled.